

# **A STUDY ON MANTHARA KAASAM**

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## INTRODUCTION

**Bronchial asthma** is a chronic inflammatory condition of the lungs and is very common allergic disease. Presently the number of people with bronchial asthma has been increasing despite the early diagnosis and contemporary approaches to treatment. Total number of asthmatic patients in the world counts more than **300 million** people.

Asthmatic patients have chronic inflammation in their respiratory tract which causes suffocation at exacerbation. The attack may be short or prolonged. With time without treatment and prophylaxis these episodes of suffocation become more severe and frequent.

Bronchial asthma is a hereditary disease, and the diseases in one of the parents doubles the risk of getting bronchial asthma by the child. If both parents have the disease, the chances of development of asthma in the child are quadrupled. In children and aged people the diseases tends to runs in more serious mode.

In siddha the symptoms of **Manthara kaasam** are correlated with **bronchial asthma**.

Siddha medicine is widely practiced and more prevalent in Tamil Nadu. In fact siddha medicine is considered as the safest medicine. Siddha medicine is esoteric and a miraculous medicine. In fact a single drug can cure several diseases by varying its adjuvants or adjuncts such as honey, butter, herbal

extract, juices etc.,- Bhogar. The success of the siddha medicine depends on the carrier of the medicine. Siddha medicine not only cures common ailments but also cures many acute and chronic infectious diseases. In fact one of the definitions of siddha medicine is *“that which ensures preventive against mortality”* as described by Thirumular in Thirumantiram.

Plant preparations are used from immemorial time for treating human ailments. The basic concept of siddha is “Food in medicine- Medicine is food”. Three major groups in the siddha medicine namely moola vargam, thaathu vargam and jeeva vargam. Siddha medicine uses three humoral concepts namely wind (vata), bile (pitta) and Phlegm (kapha). This medicine also exerts importance on pulse for determining the humours.

I would like to quote the following lines from the book “Recipes of Immortality”

*“Oh poverty! Praise to you!*

*I am a siddha because of your grace.*

*I see the whole world,*

*but no one sees me”*

- Sanskrit subhasitam Devavanipravesika, quoted in Goldman and Sutherland, 99 (Translated by Weiss)

It means that siddha practioner can see the whole world, but no one in the world sees the siddha practioner. So it clearly shows that there is a lacunae in this



system. My dissertation work is an attempt to improve Manthara kaasam which is clearly explained with symptoms and signs in Yoogi vaidhiya chinthamani -800. My dissertation work is a systematic and scientific attempt to cure Manthara kaasam by Thakkolathi chooranam which had been in use tradionally.

## **AIMS AND OBJECTIVES**

Respiratory disease affects mankind irrespective of age. Manthara kaasam is one among such diseases that affects the vayu (piranan). Siddhars have enumerated many medicine for Manthara kaasam. The disease symptoms correlates with bronchial asthma in modern aspect. The socio economic impact of bronchial asthma is enormous. The prevalence of bronchial asthma is increasing in developing countries like India. According to Siddha system of medicine the symptoms of Manthara kaasam can be controlled by proper medication and diet.

### **Objectives:**

- The objective of this dissertation work includes the study to explore definition, etiology, clinical features, diagnosis, investigations, treatment and diet for Manthara kaasam as per Siddha literature.
- This study also includes the aims at observing the incidence of the disease with regard to age, sex, occupation, socio economic status, family history, food and other habits, nilam and paruvakalam.
- This disease alters the normal conditions in mukkutram, poripulungal, envagai thervugal, naadi, neerkuri and neikuri. These can also be studied and the comparative study of this disease with modern aspect is done in this dissertation.
- The main objective of this study is to do clinical trial with **THAKKOLATHI CHOORANAM (AGATHIYAR IRANDAIYIRAM-MOONDRAM PAAGAM Pg. No. 105)** for Manthara kaasam and its evaluation in Biochemical, Pharmacological and Microbiological studies.

## **ABSTRACT**

The increasing incidence of the respiratory diseases forced my dissertation work to be Manthara kaasam and to treat with the trail drug **THAKKOLATHI CHOORANAM** – 3 gm (thrice a day after food with hot water) for the control of the disease.

The trial medicine was subjected to Biochemical, Pharmacological and Microbiological analysis.

Twenty patients of either sex were selected as In-patients and Out-patients. The trial drug was administered to them and the majority of the cases showed good results.

# **REVIEW OF LITERATURE**

## **MANTHARA KAASAM**

### **SIDDHA ASPECTS**

#### **Veru Peyargal (Synonyms)**

- Kulir irumal
- Manthara swasam

#### **Eyal (Definition)**

Manthara kaasam is characterized by breathlessness, tightness of chest, cough without expectoration, running nose, sneeze, breath sound like hissing of snake and sweating all over the body.

#### **Noi Varum Vazhi (Etiology)**

##### **1. Yugi Vaidhya Chinthamani Says,**

“வேகின்ற வதிகமாம் புகையி னாலும்

மீறுகின்ற பாணத்தால் மிக்குந் தானே”

“பானத்தால் பரமாக்கினி மிகுக்கை யாலும்

பாரமா மாமிசங்கள் புசிக்கை யாலும்

தாணத்தாற் சஞ்சாரந் தவிர்க்கை யாலும்

சரிபடாப் பதார்த்தங்கள் புசித்த லாலும்

தீணத்தாற் புசியாம லிருக்கை யாலும்

சேயிழை யார்மேலின்பஞ் சிதைவ தாலும்

மானத்தாற் மாதூக்க மடைத லாலும்

மதத்தாலுஞ் சுவாசமது மருவுங் காணே”

### **Diet and habits:**

- ❖ Excessive smoking
- ❖ Excessive intake of cold water
- ❖ Increased body heat
- ❖ Excessive intake of non-vegetarian diet
- ❖ Lack of exercise
- ❖ Intake of improperly cooked food
- ❖ Starving on hunger
- ❖ Increased stress

”காணலே தேவதைக்குப் பிரித்த பண்டம்

களவாடித் தின்றாலுங் கணவன்றன்னைத்

தோணவே நிந்தையைச் சொல்லுவதாலுஞ்

சுசியான பதார்த்த மெச்சில் பண்ணினாலும்

வேணவே ஒருவர் செய்த நன்றி தன்னை

மிக மறந்து கொடுமைகடான் விளம்புவோர்க்கும்

பேணவே சபைதனிலே சொன்னப் பேச்சுப்

புரண்டோர்க்குங் காசமது பிறக்குந் தானே”

## **Character and Behaviours :**

- ❖ Excessive coitus
- ❖ Increased stress
- ❖ Stealing foods which are prepared for God
- ❖ Cursing life partner
- ❖ Tasting other's foods
- ❖ Forgetting one's help
- ❖ Those who didn't keep his words

## **2. Siddha Maruthuvam (Pothu) Says,**

இந்நோய் குளிர்காற்றிலீடுபடல், வெயிலில் மிகுதியும் அலைதல், மிக்க குளிர்ச்சியைத் தரும் பொருளையும், சூட்டைத் தரும் பொருளையும் உண்ணல், பெரிதும் உரத்துப் பேசுதல், மிக்க காரப்பொருள், நன்மணம், தீ மணம் ஆகியவற்றை முகர்வதாலும் பிறக்கும்.

- ❖ Exposure to cold weather
- ❖ Over strain in hot climate
- ❖ Taking cold and hot foods
- ❖ Singing in high pitched voice
- ❖ Intake of spicy food
- ❖ Due to irritants like dust, mud, lime etc.,
- ❖ Inhalation of pleasant as well as irritable odour

### 3. Thanvandri Vaidhyam Says,

“அரசரோ கந்தனக்கே யமைச்சராய் காசரோகம்

தரை மிசை மாந்தர் தம்மைச் சார்ந்திடும் வகையோ தன்னி

லுரமிசை கிலேசந் தங்கு முறுதுய ராலு மாதர்

தருமயலாலுந் தூமஞ் சார்துகள் முகர்ந்ததாலும்;.”

- ❖ Over stress
- ❖ Excessive coitus
- ❖ Inhalation of dusts, pollens etc.,

### 4. Sushrutha Samhitha says,

- ❖ இந்நோய் பிராணன் என்ற முதன்மை வாயு கேடுற்று அதிகரித்து, கபத்துடன் இணைந்து மேல்முச்சு மற்றும் கஷ்ட சுவாசம் முதலிய குறிகுணங்களை உண்டாக்கும்.
- ❖ The disease occurs due to alteration of the vital vayu known as Prirana vayu which differs from its normal function and get raised and unites with the deranged kaba of the body and produces the symptoms such as gasping and labored breathing.

### 5. Roga Nirnaya Saram Says,

தேகத்தில் அக்கினி அதிகரித்து நெஞ்சு புண்ணாகி வாயு அதோமுகமாக மேல்சென்று மார்பில் தங்கி உண்டாகும்.

Due to vitiation of excessive Agni in the thorax, Vayu vitiates and it gets accumulated in thorax. This causes breathlessness.

## 6. T.V.Sambasivam Pillai Dictionary Says,

மழை மேகம், குளிர்ந்த தண்ணீர், சீதளபண்டம், ஆகிய இவைகளினால் உண்டாகும் ஓர் வகை காசம்.

A disease caused by exposure to cold environment, rainy season, drinking cold water and intake of cooling food.

## 7. Anubava Vaitheya Deva Ragaseyam says,

வாத கபங்களின் விருத்தி, அசீரண பேதி, வாந்தி, விஷப்பாண்டு, விடாச்சுரம், புகை, காற்று, தானியச்சுனை, அதிசீதளக்கபம், மர்ம தானங்களில் அடிபடுதல் முதலிய காரணங்களினால் உண்டாகும்.

- ❖ Excessive Vadha and Kaba
- ❖ Diarrhoea due to indigestion
- ❖ Vomitting
- ❖ Toxic anaemia
- ❖ Persistance fever
- ❖ Excessive cold
- ❖ Husks of the grains and pulse
- ❖ Trauma of the genital organs



## Murkurigal (Preliminary Signs)

### 1. Siddha Maruthuvam (Pothu) says

தொண்டை புண்பட்டது போல நோதல், பின் தொண்டை சிவத்தல்,  
தொண்டையில் முள்ளால் குத்துவது போன்ற உணர்ச்சி ஏற்படல்,  
குரலோசை குறைதல், மூக்கு நீர் பாய்தல், மார்பு நோதல், சூடுள்ள  
பொருளில் விருப்பம் முதலியன உண்டாகும்.

- ❖ Sore throat
- ❖ Pricking sensation in the throat
- ❖ Decrease in voice pitch
- ❖ Running nose
- ❖ Tightness of chest
- ❖ Desire towards hot food

### 2. Therayar Vagadam Says

”வந்திடும் வெள்ளோக்காளம் வாயது தித்திப்பாகும்

நொந்திடும் பிடரி மண்டை மந்தமு மிளைப் பிணோங்கும்

முந்தவே தலைதா னொந்து சரீரமுகமுங் குத்தும்

சுந்தர தொண்டை நாசி கரகரன் றுடனே தும்மல;”

- ❖ Regurgitation
- ❖ Sense of sweet taste in tongue
- ❖ Occipital Headache, Pain all over the body.
- ❖ Soreness of throat
- ❖ Sneeze

## **Noi Enn (Classification) & Manthara kaasam Kurigunangal**

### **I. Yugi Vaidhya Chindamani says,**

Mantharakaasam is described as one of the twelve types of Kaasam.

## Manthara Kaasam

“தானான தூயதோர் நாசி தன்னில்

சலநோய் நீர்தான் விழுந்த தும்மலுண்டாம்

மானான மார்புநெஞ் சடைத்து மூச்சு

வலுவாக பாம்புபோல் சீற லாகும்

கானான கண்டமோடு முகமுங் காதும்

காயமதுங் கசிவாகி வியர்வை யாகும்

ஏனான இருமலோடு கோழை கம்மல்

இரைப் பாகு மந்தாரகாச மாமே”

- யூகி வைத்திய சிந்தாமணி

Manthara kasam is characterized by running nose, sneezing, tightness of chest, breath sound like hissing of snake, excessive sweating all over the body, cough without expectoration, breathlessness.

## II. Agasthiyar – 2000 Says

There are eight types.

### Manthara Kaasam:

“மந்தாரகாசமே வந்தால் வாங்கிடும் சுவாசம் மேலா

யித்தார மெய்ச்சுரம் காணுமே இளைத்திடு மிருமல் மெத்த

சந்தா யுடம்பு தலையுடம்பு தளரவலிக்கு மிளைப்புமாகும்

பந்தாயுடம்பு நெஞ்சமுகம் பத்தி வலிக்கும் பண்பிதே”

The characteristic features of the disease are breathlessness, fever, frequent cough, emaciation, pain in the chest and face.

### **III. Danvantri Vaidhyam Says,**

There are 5 types of kaasam.

#### **Manthara Kaasam:**

”தூயதோர் நாசிதன்னில் தும்மல்தான் மிகவுண்டாம்

நோயநீர் விழுந்து நெஞ்சு நொந்தடைத் தீளை வாங்கு

வாயு மந்தார காசத் தடவுது தானே யென்ன

மாயமா முனிவன் சொன்ன வளமையை யறிந்து கொள்ளே”

Running nose, sneeze, tightness of chest, breathlessness and cough with expectoration are the characteristic features of this disease.

### **IV. Sikitcha Rathna Dheepam says,**

#### **Sikitcha Rathna Dheepam says,**

There are twelve types of Kaasam.

#### **Manthara kaasam:**

- ❖ நாசியில் மாறா சலம் வடிதல்
- ❖ தும்மல்
- ❖ கபச்சேர்க்கையால் மேல்மூச்சு
- ❖ பாம்பின் சீறலைப் போல இழுப்பின் தொனி
- ❖ கண்டம், முகம், காது இவைகளில் வியர்த்தல்
- ❖ இருமலோடு கோழை
- ❖ குரல் கம்மல்

## V. Anubava Vaidiya Deva Rgasiyam says,

These are 5 types of kaasam

1. Oorthuva swasam
2. Arppa Swasam
3. Vichinna Swasam
4. Maha Swasam

### 5. Manthara Swasam or Thamaraga Swasam

## Manthara Swasam or Thamaraga Swasam

மார்பிலும் இருபக்க விலாவிலும் நோயை உண்டாக்கி கண்டத்தில் குறுகுறு என்ற சத்தத்துடன் இருமல், சோருதல், பீனிசம், அருசி, தாகம் எனும் குறிகுணங்களை அதிகரித்து, சகிக்கக்கூடாத சுவாசத்தை உண்டாக்கும். இரைப்பினால் தேகமெல்லாம் அதிர்ந்து குலுங்கல், கண்டத்தில் அடைத்த கோழை வெளிப்பட்டால் சிறிது செளக்கியமாக காணல், பிரயாசத்துடன் சயனித்தல், பெருமூச்சு விடல், உட்கார்ந்தால் சிறிது செளக்கியம், நெற்றியில் வியர்வை, அடிக்கடி வாயுலரல், தேகம் நடுக்கல், உஷ்ணதிரவத்தில் இச்சை முதலிய குறிகுணங்களைப் பெற்றிருக்கும். இது பஞ்சேந்திரியங்களின் மயக்கம் உண்டுபண்ணுவதால் **தமரகசுவாசம்** என்றும், மேலும் பனிக்காலம், குளிர்ந்த ஜலம், சீதள பதார்த்தம், கீழ்க்காற்று இவைகளால் சுவாசம் அதிகரிப்பதால் **மந்தாரகாசம்** என்றும் **மந்தார சுவாசம்** என்றும் அழைக்கப்படும். இந்நோய் தனித்து இருப்பின் சாத்தியம் என்றும், சுரம், மூர்ச்சை உண்டானால் அசாத்தியம் என்றும் கூறுவர்.

## VI. Uyir Kakkum Siddha Maruthuvam @ Aathma Rakshmirtham says,

There are three types of kaasam

1. **Manthara kaasam**
2. Nachu Pitha kaasam
3. Ratha kaasam

### **Manthara Kaasam:**

முகமும் காதும் ஊறும். நாசி கரகரத்து தும்மல் உண்டாகும். நீர் வடியும், நெஞ்சில் கபம் கட்டி இருமும், இளைக்கும். நெஞ்சு விலாவும் வலிக்கும். மந்தார காலங்களில் நோய் அதிகப்படும். பசிமந்தம் ஏற்படும். வயிறு பொருமும். உடல் அதைக்கும். கிறுகிறுக்கும்.

Itching in the face and nose. Sneeze, runing nose, accumulation of kabam in the chest, cough and difficulty in breathing, pain in chest & ribs and it occurs during winter and rainy season. Loss of appetite, flatulance, edema of the body and giddiness are seen in Manthara kasam.

## VII. Tamilaga Siddha Vaitheya Gurugulam says,

There are twelve types.

The charactersitic features are as follows.

### **Manthara kaasam:**

- ❖ முக்கில் சதா நீர் ஒழுகுதல்
- ❖ கப மிகுதியால் மேல் மூச்சு வாங்குதல்
- ❖ பாம்பின் சீறலைப் போல இழுப்பின் தொனி
- ❖ கண்டம், முகம், காது இவைகளில் வியர்வை
- ❖ இருமலுடன் கோழை வெளிப்படல்
- ❖ குரல் கம்மல்

## VIII Raja Vaidhya Bodhini Part I says

There are 12 types of kasam

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. Vadha Kaasam         | 7. <b><u>Manthara Kaasam</u></b> |
| 2. Pitha Kaasam         | 8. Swasa Kaasam                  |
| 3. Sethuma Kaasam       | 9. Shaya Kaasam                  |
| 4. Vadha Pitha Kaasam   | 10. Sudar Kaasam                 |
| 5. Pitha Sethuma Kaasam | 11. Peenisa Kaasam               |
| 6. Thontha Kaasam       | 12. Naadha Kaasam                |

❖ மந்தாரகாசம் பற்றிய குறிப்புகள் இந்நூலில் தரப்படவில்லை.

## IX.T.V.Sambasivam Pillai Dictionary says

There are Twenty types of kasam

- |                                  |                           |
|----------------------------------|---------------------------|
| 1. Swasa kaasam                  | 11. Eelai kaasam          |
| 2. <b><u>Manthara kaasam</u></b> | 12. Thontha kaasam        |
| 3. Ratha kaasam                  | 13. Pakka kaasam          |
| 4. Neela kaasam                  | 14. Pakka manthara kaasam |
| 5. Silethuma kaasam              | 15. Sudar kaasam          |
| 6. Pitha kaasam                  | 16. Peenisa kaasam        |
| 7. Vadha kaasam                  | 17. Naadha kaasam         |
| 8. Bala kaasam                   | 18. Vali kaasam           |
| 9. Virana kaasam                 | 19. Adaippu kaasam        |
| 10. Karppa kaasam                | 20. Gunma kaasam          |

## Manthara kaasam

முகம், காது ஊரலெடுத்து, மூக்கு கரகரத்து, தும்மலுடன் நீர்வடிந்து நெஞ்சில் கபங்கட்டி மந்தாரகாலங்களில் நோய் அதிகரித்து, இருமல், இளைப்புண்டாகி நெஞ்சு விலாவில் வலி காணும் ஓர் சய ரோகம்.

- ❖ Itching over face and ear
- ❖ Rhinitis
- ❖ Increased accumulation of kaba in rainy and cold seasons
- ❖ Sneezing
- ❖ Cough
- ❖ Breathlessness
- ❖ Pain over the ribs

All these symptoms occur during cloudy seasons only.

## XI .Roga Nirnaya saram says

### Manthara kasam:

வாயு சிலேத்துமத்துடன் சேர்ந்து நரம்புகளில் வியாபித்து கண்டத்தில் குறுகுறு சத்தம், சகிக்க கூடாத அதிகவாசம், அதி இரைப்பு, அதி கோழை, பெருமூச்சு விடுதல்.

The charecteristic features of the disease are vadha in combination with kaba affecting the nerves and causes rattling sound in throat, unbearable difficulty in breathing, increased breathing with sputum production.



## Mukutra Verupadugal (Pathology)

In siddha system of medicine, the manifestation of all the diseases are the result of derangement of Doshas i e., Vadham, Pitham, Kabam. The prime factor which is involved in Manthara kaasam is Kaba, which is accompanied with vitiated Vadha or Pitha so and produce clinical symptoms of Manthara kaasam. This is clearly indicated by Theraiyar as ,

“கபத்தினை யன்றி காச சுவாசம் காணாது”

- தேரையர்

1. Excessive Kaba in the respiratory organs affects the Melnokku kal and Uyir kal and so the vayu is not able to reach the terminal points of respiration which produces gasping and laboured breathing.
2. Some authors says that the disease is caused by deranged Vadha. This thought is also acceptable because of the destruction of Vayu in the respiratory tract which is abnormally present.
3. Excessive intake of Pitha prompting diet induces Pitha Kutram. This type of Pitha produces more heat and this heat goes to head resulting in running nose, heaviness of head and neck, sneezing and also induces formation of water vapours in the lungs and causes narrowing of air passage, which leads to the onset of the disease. This is indicated as,

“பித்தமே மிகுந்தா லீளை யிருமலும் பெலத்து நிற்கும்

உற்றிடும் ஐயநாடி ஓங்கியே துடித்து நின்றால்

பற்றிடும் இருமல் ஈளை பதறியே இரைப்புண்டாகி

மெத்தவே கோழை வாய் மிகுதிப்படும்”

- நோய் நாடல் நோய் முதல் நாடல்

So the changes in the diet and habits which increase Vadha and Kaba produces the clinical symptoms of Manthara kaasam In Uyir Nilaigal, Anagatham (chest) which is the residence of Udhanan (Melnokku kal) and Pranan (Uyir kal) is deranged. When Pranan, the primary vayu is affected it leads to difficulty in breathing and involvement of Udhanan leads to cough and sneezing.

Involvement of Kirugaran leads to running nose, cough, sneezing. Involvement of Devathathan leads to tiredness. Involvement of Samanan causes inability to control the other Vayus and causes loss of appetite.

In Kaba, the derangement of Avalambagam leads to breathlessness, cough, wheezing. In the seven Udal Thathus - Saaram, Senneer are affected which leads to lethargy and depression. In severe cases Oon and Kozhuppu are also affected which leads to symptoms of emaciation and body pain.

### **Piniyari Muraimai (Diagnosis)**

The way of diagnosis is very important by which a physician can deal the disease, then he can rule out the cause of the disease and then treat the disease.

The diagnosis is based on four criterias

1. Poriyal arithal
2. Pulanal arithal
3. Vinathal
4. En Vagai Thervugal

## 1. Poriyal Arithal

Poriyal are the five organs of perception. In Manthara kasam, it is as follows:

Mei (Skin)	-	Sweating all over the body, waxy
Vai (Tongue)	-	Dry, pale and sometimes coated due to constipation
Kann (Eye)	-	Sometimes dusky and pale
Mookku (Nose)	-	Running nose, irritation of nose, visible movement of alar nasi.
Sevi (Ear)	-	Normal

## 2. Pulanal Arithal

Pulanal are the five objects of senses.

Ooru , oosai, ozhi	-	Normal
Suvai (Taste)	-	diminished or normal
Naatram (Smell)	-	Altered or absent due to running nose and inflammation of nasal mucosa

## 3. Vinadhal

By Vinadhal, the physician enquires about the patient's Name, age, occupation, native place(Thinai), family history, socio-economic status, diet habits, prone to exposure of any allergens, (ex: dust, smoke, pollens) and his complaints and duration with the history of previous episodes and its frequency in season.

## PARUVA KAALAM (Season)

Year is divided into six seasons. They are,

- 1.Karkaalam - Avani & Purattasi - August & September
- 2.Koothirkaalam - Iyppasi & Karthigai - October & November
- 3.Munpanikaalam - Margazhi & Thai - December & January
- 4.Pinpanikaalam - Masi & Panguni - February & March
- 5.Elavenilkaalam - Chithirai & Vaigasi - April & May
- 6.Mudhuvenilkaalam- Aani & Aadi - June & July

Increased incidence of Mantharakasam mainly occurs- Karthigai to Masi (Kabam thannilai sirappurum Kaalam ) and also in Karkaalam.

This is described in Siddha literature as,

”மூவரு மீறி முனிவு கொளாமல்

தத்தம் நிலையில் தன்னரசியலும்

காலவரைதனை கிளரக் கேண்மின்

ஆடியாதியாய் ஐப்பசி ஈராய்

ஆனிலமதற்கோ ராசியல் காலம்

மீன் முதலாளி வீறுகொள் மந்திரி

தேள் முதன் மாசி சேனாபதிக்கே”

தேள் - கார்த்திகை

- நோய் நாடல் நோய் முதனாடல்

## MUKKUTRA NILAIGAL

### VADHAM

“முறைமையாம் பிராண னோட்பானம் வியானன்

முர்க்கமா முதானனோடு சமான னாகன்

திறமையாங் கூர்மனோடு கிருக றன்றன்

தேவதத்த னொடு தனஞ் சயனுமாகும்”

- யூகி 800 தத்துவவிதி 35

### In Manthara kaasam,

**Pranan** - Vayu is affected leading to difficulty in breathing.

**Abanan** - Some patients had constipation.

**Viyanan** - Saaram distribution gets affected.

**Samanan** - This vayu gets affected since it cannot control other vayus.

**Udhanan** - It gets affected due to difficulty in breathing.

**Nagan, koorman**- Normal

**Kirugaran** - This vayu gets deranged causing running nose, sneeze,  
cough and loss of appetite.

**Devathathan**- this vayu is deranged causing emotional stress.

**Dhanajeyan** - It produces swelling of the body after death and escapes  
through the scalp after the third day of death.

## PITHAM

“ஆக்கனல் வண்ண வெரி யாற்றலங்கி யொள் ளொளித்தீ  
நோக்கழலாம் பித்தமைந்த நூதனமா யாக்கு மொழி  
பாசமி ரஞ்சகஞ் சாதகம் ராசகமா  
லோசக மென்றிடு மாலேர்”

- மருத்துவ தனிப்பாடல்

### In Manthara Kaasam,

**Anal pitham** - It causes loss of appetite in some patients.

**Ranjagam , Sadhagam, Aalosagam** - Normal

**Prasagam** - Some patients may have eczema with blackish discolouration of the skin.

## KABAM

“ஆதர வாம் மெய்க்கவலம் பதமாங்கி  
லேதக மாஞ்சுவைப் பேதமுணர்ப் பேதாகமாம்  
தற்பகமாஞ் சந்திகளிற் றங்குஞ் சிலேடகமா  
மற்பமிலாச் சேத்தும மைந்து”

- மருத்துவ தனிப்பாடல்

**Avalambagam** -It is deranged in Manthara Kasam patients due to the presence of tightness of chest, cough, wheezing, and breathlessness.

**Kilethagam** - Some patients have loss of appetite

**Pothagam, Tharpagam, Sandhigam** – Normal.

## UDAL KATTUGAL

”தன்ன மாம ரச மிரத்தமாங்கிசமு மேதை

தசை மச்சையொடு சுக்கிலந்தா தேழாகி”

- யூகி 800

**Saaram** - It is deranged in Mantharakasam due to loss of appetite causing tiredness in the body and mind.

**Senneer** - This is deranged in some patients with weakness.

**Oon, Kozhuppu, Moolai, Sukkila/ Suronitham** –Normal.

## EN VAGAI THERVUGAL

It is the basic diagnostic principle and the uniqueness of the Siddha system of Medicine. The following lines reveal this as follows.

”நாடிஸ்பரிசம் நாநிறம் மொழிவிழி

மலம் மூத்திரமிவை மருத்துவ ராயுதம்.”

- நோய் நாடல் நோய் முதனாடல்

And,

“மெய்க்குறி நிறந்தொனி விழி நாவிருமலம் கைக்குறி

நீடிய விழியினாலும் நின்ற நாக்குறிப்பானாலும்

வாடிய மேனியினாலும் மலமொடு நீரினாலும்

சூடிய வவியாதி தன்னைச் சுகம் பெற அறிந்து சொல்லே”

- அகத்தியா;

**In Manthara kaasam,**

**a. Naa (Tongue)** - patients the sputum is scanty and mucoid.

**b. Niram (Colour of the skin)** - the colour of the skin, conjunctiva, may be pale.

**c. Mozhi (Speech)** – Low pitched voice.

**d. Vizhi (Eye)** – Eyes may be pallor.

”கோதுற்ற சிலேற்பனத் தோர்க்கு கூர்விழிவெளுத்திருக்கும்”

**e. Malam** – Constipation may be present.

“மல மறசிக்கலாக வெளுத்திடு மையத்திற்கு”

“மன்னுங் சேத்துமத்தோர் மலம் வீழ்குறி

இன்னல் தீர் வீழிம் வெளுப்பன்னவே”

**f. Moothiram (Urine)** – It may be light yellow.

**g. Sparisam (palpation)** – It may be cold due to excessive sweating.

”சேட்மசடம் வேர்வை கொண்டேயிருக்கும்”

”சேத்துமத்தின் தேகந்தானும் சிக்கென்று குளிர்ந்திருக்கும்”

**h. Naadi (Pulse)**

Naadi is the very important helpful observation for diagnosis and prognosis.



## Naadi Nadai in Mantharakasam

### Vatha Kaba Naadi

”பாங்கான வாதத்தில் சேத்தும நாடிப்  
பரிசித்தால் திமிர் மேவு முளைச்சலாகும்  
தீங்கான இருமலுடன் சந்தி தோடம்  
சேர்ந்த விடம் வெடிகூலை யிருத்ரோகம்  
வாங்காத ஈளை மந்தார காசம்  
வலியுடனே புறவீச்சுயுள் வீச்சு வீக்கம்  
ஓங்காணஞ்சுர முடனே சுவாச காசம்  
உண்டாகும் வெகு நோய்க்கு முறுதிதானே”  
- சதக நாடி

### Iya Naadi

”தானமுள்ள சேத்து மந்தானிளகில் வெப்பு,  
சயமீளை யிருமல் மந்தார காசம்  
ஈனமுறுஞ் சந்நிவிட தோடம் விக்கல்  
யிருத்ரோகங் கரப்பான் விரண தோடம்  
மானனையீர் சூலைதிரள் வியாதி வீக்கம்  
வருஞ்சக்தி சுவாசம் நெஞ்சடைப்பு தூக்கம்  
ஏனமுறுங் காமாலை பாண்டு சோபை  
ஏழுசுரங்கள் பலதுக்கம் விட முண்டாமே”  
- சதக நாடி

## Kaba Pitha Naadi

”இடமான சேத்துமத்தில் பித்த நாடி  
எழுந்தனுகில் விடமுடனே வீக்கமுண்டாம்  
திடமான குளிர் காய்ச்சல் மஞ்சள் நோவுந்  
தேகத்தி லுளைச்சலிளைப் பிருமல் வாந்தி  
விடமான நெஞ்சடைப்பு **சுவாசம்** விக்கல்  
வெகு சுரமும் நாவறட்சி பாண்டுரோகம்  
அடமான குவளைரத்த மதிசாரந்தான்  
அணுகி வெகுபல நோய்க்குந் தடங்கண்டாயே”

- சதகநாடி

## Nei Kuri

This urine examination is unique in Siddha system of Medicine. For this examination urine is collected in the early morning in a pure glass vessel. The day before of examination the patient is advised to take a balanced diet and avoid excessive diet, in take of diet during irregular timings.

”நிறக்குறிக் குரைத்த நிருமாண நீரிற்  
சிறக்க வெண்ணெய்யோர் சிறுதுளி நடுவிடுத்  
தென்றுறத் திறந்தொலி யேகாதமைத்ததி  
னின்றதிவலை போம் நெறிவிழியறிவும்  
சென்றது புகலுஞ் செய்தியை யுணரே”

- நோய் நாடல் நோய் முதனாடல்

A drop of gingelly oil is dropped on a wide glass vessel containing the urine to be tested which is kept under sunlight in a calm place and the mode of spread of gingelly oil on the urine surface indicates the derangement of the three dhoshas and it can be diagnosed .

”அரவென நீண்டின் அ. .தே வாதம்”

”ஆழிபோற் பரவின் அ. .தே பித்தம்”

”முத்தொத்து நிற்கின் மொழிவதென் கபமே”

- நோய் நாடல் நோய்

முதனாடல்;

❖ Oil spreading like a snake indicates Vatha.

❖ Oil spreading like a ring indicates Pitha

❖ Oil spreading like a pearl indicates Kaba

”அரவிலாழியும் ஆழியில் அரவும்

அரவில் முத்தும் ஆழியில் முத்தும்

தோற்றில் தொந்த தோடங்களாமே”

- நோய் நாடல் நோய் முதனாடல்

Oil spreading like snake and ring, ring and snake, snake and pearl, ring and pearl all comes under Dhondha Dhosham.

In Manthara kasam, most of the Nei Kuri findings result pearl like oil floating on the urine.

## DIFFERENTIAL DIAGNOSIS

**DISEASES SIMILAR TO MANTHARA KASAM** are,

**Swasa Kaasam:**

“வண்மையாய் கோழை கட்டி இருமீ விழும்  
மாநாகம் போலவே வாங்குஞ் சுவாசம்  
திண்மையாய் செருமலுண்டா மடிக்கடிக்குச்  
சீரணமில் லாமலேவ யிறு ஊதும்  
நன்மையாய் நாசியது தனல் போலாகும்  
நளிந்து டம்புவற்றிவரும் குரலும் கம்மும்  
உண்மையா யுண்ணாக்கி லூறுங் கேணி  
உழுறுமே சுவாச காசத்தி னொப்பே”

- யூகி வைத்திய சிந்தாமணி

In swasa kaasam there is cough with expectoration, breathing sound like hissing of snake, hoarseness of voice, indigestion, flatulence, rhinitis, emaciation, brashing. Cough with expectoration in swasa kaasam differentiates it from Manthara kaasam where there is no sputum production.

## 2.Kandakiragam

“வகையான குரலதனைப் பற்றி நொந்து  
மார்போடு பிடரியினில் வலி யுண்டாகி  
நுகரான சரீரமெல்லாம் நொந்த ழாற்றி  
நுணுக்கமாய்ச் சுவாசமது புறப் படாமல்  
முகையான நாவாவே மூச்சு மாறி  
முகத்திலே வியர்வாகி விலாநோ வுண்டாம்  
புகையான வன்னத்தைப் பருகொட் டாது  
பரியகண்ட கிரகத்தின் பண்பு தானே”

- யூகி வைத்திய சிந்தாமணி

In Kandakiragam, there is difficulty in speech, pain in the chest and occipital region, pain all over the body, breathlessness, sweating in face, pain in the ribs, anorexia.

In Mantharakasam, there is no painful conditions like occipital pain, body pain and throat pain.

### 3.Swasa Pitham

“கருத்தாகச் சுவாசமது மிகவுண் டாகுங்

கனமாக வயிறுமே ஊதிக் காணும்

உருத்தாக உடலதுதான் மிகவ லிக்கு

முறுமே கேணி போல் வாய்நீர் தானும்

மருத்தாக மயங்கியே கண்ம றைக்கும்

மார்பிலே வலியோடு இரும் லுண்டாந்

துருத்தாக வயிறதனின் பசியோ வில்லை

சுவாசமாம் பித்தத்தின் சூட்சந் தானே”

- யுகி வைத்திய சிந்தாமணி

In Swasa Pitham, there is increased respiration (tachypnoea), flatulence, pain all over the body, blurring of vision, cough, loss of consciousness, pain in the chest followed by cough, loss of appetite etc.,

In Mantharakasam there is no loss of consciousness, distension of abdomen and blurring of vision.

#### 4. Swasa Silethumam

“திறமையாய் நெஞ்சுதனிற் கோழை கட்டுஞ்

சிக்கென்று தானிருமி முக்க டைக்குங்

குறுமையாய் குறட்டென்று சுவாசங் காணுங்

குளிரோடு சுரமுண்டாய் மயக்க மாகும்

மறமையாய் மார்போடு நெஞ்ச டைக்கும்

வாய்வறண்டு முக்கதனில் நீரே பாயும்

வெறுமையாய் மிகத்தண்ணீர் தாப முண்டாய்

விடுசுவாச சிலேட்டுமத்தின் விவரந் தானே”

- யூகி வைத்திய சிந்தாமணி

In Swasa Silethumam, there is congestion of lungs, nasal congestion, cough, dyspnea, fever with rigor, syncope, chest tightness, dryness of mouth, running nose, excessive thirst etc.,

In Manthara kasam, there is no fever with rigor.

## **TREATMENT**

### **Trial Medicine**

Mainly antispasmodic, antihistamine, expectorant, to relieve the spasm and to expel the sputum.

### **Diet:**

To maintain tridhoshas and energy in equilibrium.

### **Prevention methods :**

To strengthen the muscles of respiration (Pranayamam)

### **Yoga therapy :**

To maintain dhasa vayukkal and to improve mental and physical health.

### **1. Administration of trial medicine :**

**THAKKOLATHI CHOORANAM** – 3 gm thrice a day after meals with  
hot water

### **2. Diet :**

The diet regiments for Kaba patients according to Siddhars are explained below.

”கத்தரி பேய்புடல் வரை யிருபாகல் பருங்காளா கண்டகாரி  
அத்திக் காய்களும் வருக்கைமாயற்றை கரையால் பீர்க்கரும் பிஞ்சுவேர்  
மொய்த்த சூரணங் கதலித் தண்டுகளைப் பூமுளங்கி முருக்கரும்பும்  
அத்தி பூசணிக் காயருள்ளி வள்ளியுங் கபத்தோர்க் காணமாமே”

- பதார்த்த குண சிந்தாமணி

“வேளை மணத்தக்காளி மென்சீதை சக்கரவர்த்தி

பீளை வசலை சுக்கு பெண்கணங்கள் - வேளையில்

செந்தளிர் களைக்கீரை செய்வர் கபதேகர் நிதம்

வந்தளியுணத்தான் மகிழ்ந்து”

- பதார்த்த குண சிந்தாமணி

Vegetables to be added in diet

- ❖ கத்தரி (Solanum melongena)
- ❖ பேய்புடல; (Trichosanthes cucumerina)
- ❖ அவரை (Dolichos lab-lab)
- ❖ கண்டங்கத்தரி (Solanum xanthocarpum)
- ❖ அத்தி (Ficus glomavata)
- ❖ பீர்க்கு (Luffa acutaugula)
- ❖ மாவடு (Mangifera indica)
- ❖ வாழைக்காய் (Musa paradisiaca)
- ❖ முருங்கை (Moringa tinctoria)
- ❖ சுண்டை (Solanum torvum)

Tubers to be added in diet

- ❖ முள்ளங்கி (Raphanus sativus)
- ❖ ஈருள்ளி (Allium sativum, Allium cepa)
- ❖ இஞ்சி (Zingiber officinale)
- ❖ கருணைத்தண்டு (Amorphophallus companulatus)



Greens to be added in diet

- ❖ மணத்தக்காளி (Solanum Nigrum)
- ❖ கரிசாலை (Eclipta alba)
- ❖ பீளை (Aerva lanata)
- ❖ வசலை (Bascella alba)
- ❖ சிறுகீரை (Amaranthus gangeticus)
- ❖ மணலிக்கீரை (Gisekia pharmacoides)
- ❖ பரட்டைக்கீரை (Justicia madurensis)
- ❖ புளியாரைக்கீரை (Oxalis corniculata)

### Diet Restriction :

Siddhars advice to avoid certain food items during diseased conditions and this includes the following,

”கடுகு நற்றிலத் தெண்ணெய் கூழ்பாண்டங் கடலை

வடுவ தாகிய தெங்குமா வருக்கை நற்காய

மழவி லாதவெள் ஞள்ளிகொள் புகையிலை மதுபெண்

இடறு பாகவோ டகத்தி நீக்கிடலிச் சாபத்தியம்”

- தேரையர் வெண்பா

Mustard, Bengal gram, Mango, Garlic, Tobacco, Bitter guard, Asafoetida, Gingelly oil, Coconut, Jack fruit, Horse gram, Alcohol, Sesban, And also, they are advised to avoid coitus.

These are general diet and habitual restrictions for all diseases.

❖ Kaba patients should restrict the followings also.

Onion, Jaggery, Curd , Butter, Ghee, Fish, Dry Fish.

### 3. Prevention

1. Avoid cold weather
2. Avoid working in pollutants as dust, cement, cotton mills and in husks.
3. Avoid smoking
4. To sleep in phoenix mat, prevent Kaba diseases.

”சிற்றீச்சுப் பாயிற் றினமும் படுப்பவருக்

குற்றிடுமே காந்த லுடம்புவருஞ்-சுற்றியதோர்

வாயுவும் பித்தமறு மற்றுங் கபந்தீருந்

தாயகமா மிக்குணத்தைச் சாற்று”

- அகத்தியர் குணவாகடம்

Advice to practice Pranayamam after the treatment prophylaxis.

### PRANAYAMAM (Breathing Exercise)

”ஏறுதல் பூரகம் ஈரெட்டு வாமத்தால்

ஆறுதல் கும்பகம் அனுபத்து நாலதில்

ஊறுதல் முப்பத்திரண்டதில் ரேசகம்

மாறுதல் ஒன்றின் கண் வஞ்சகமாமே”

Pranayamam or breathing exercise mainly consists of

- ❖ Pooragam (inhalation of air by deep inspiration),
- ❖ Kumbagam (holding the breath as far as possible)
- ❖ Resagam (exhalation of air by expiration)

During breathing exercise, the lungs filled with fresh air in its anatomical dead space also and expand well and get proper supply of oxygen by proper expansion of chest. So, Pranayama practice is one of the prevention technique for Manthara Kasam.

This practice also gives good appetite, strength, enthusiasm, rigor and vitality.

#### **4. YOGA THERAPY**

Yogasana is one of the most spiritual legacies gifted by our ancient sages. Asanas strengthen the muscles of respiration and diaphragm as well as regulate respiration. So, practising asanas is more helpful in asthmatic patients.

## **MODERN ASPECTS**

### **ANATOMY & PHYSIOLOGY OF RESPIRATORY SYSTEM**

The organs of the respiration are

- ❖ Nose
- ❖ Pharynx
- ❖ Larynx
- ❖ Trachea
- ❖ Pair of bronchi
- ❖ Bronchioles and small air passages
- ❖ Muscles of respiration - the inter costal muscles and the diaphragm

The respiratory system brings air in close relationship with the mixed venous blood enabling tissue respiration.

#### **Nose and Nasal cavity**

Nose is lined by ciliated columnar epithelium which contains the mucus secreting goblet cells.

Nose is an aerodynamic structure that not only brings the air inside the body but also warms, moistens and filters it. The anterior nares has hairs which effectively filters and cleans the air and traps the dust particles. The underlying epithelium is lined with highly vascularized mucosa which protects it from drying and irritation. Sneezing is a reflex action, in fact it is protective reaction of the body to expel the irritant.

## **Pharynx**

Pharynx is the passage extending from the base of skull to the level of 6<sup>th</sup> cervical vertebra where it is further continued by esophagus.

Pharynx is divided into three segments namely Naso Pharynx (which extends from the base of skull to the soft palate), Oro Pharynx (which extend from soft palate to the pharyngoepiglottic fold), and Laryngo Pharynx (which extends from the pharyngoepiglottic fold to the upper esophageal sphincter).

The main functions of pharynx include passage of the air and food, to warm and humidify the air, tasting and hearing protection.

## **Larynx**

The larynx is the voice box which is located at the level of the upper cervical vertebrae. It extends from the root of the tongue at the inlet of the larynx up to the commencement of the trachea. It functions as an air passage.

## **Functions**

Larynx is involved in the production of sound and speech. The production of sound occurs during expiration when the sound produced by the vocal cords is manipulated by the tongue, cheeks, lips.

It protects the lower respiratory tract from the swallowed food from mouth. It acts as a passage for air between pharynx and trachea.

Larynx humidifies and warms the air during its passage. It also filters the air.

## **Trachea**

Trachea is commonly called as windpipe. It begins under the larynx.

Trachea is lined with mucosa. Trachea helps in the passage of air.

## **Cough reflex**

Nerve endings in the larynx, trachea and bronchi are sensitive to irritation. When there is any irritation, it stimulates nerve impulse which is induced by the vagus nerve to the respiratory centre located in the brain stem. The reflex motor response is deep inspiration followed by closed glottis. As a result of this, the intra pleural pressure rises.

This is followed by sudden opening of the glottis with explosive out flow of air at a higher velocity. As a consecutive reaction, the irritant will be repelled out of the respiratory tract.

## **Bronchi and Smaller Air Passage**

The trachea divides at the level of 5<sup>th</sup> thoracic vertebra to form a pair of bronchi. The right bronchus is wider and shorter when compared to the left bronchus.

Bronchi are composed of the same tissue as the trachea. They are lined with ciliated columnar epithelial cells. The bronchus progressively subdivides into bronchioles, terminal bronchioles, respiratory bronchioles, alveolar duct and finally alveoli.

## **Functions of air passage not involved in gas exchange**

### **Control of air entry**

The respiratory passage may be altered by contraction and relaxation of the involuntary muscles in their walls. This involuntary action regulates the volume of air entering the lungs. These changes are under the control of the autonomic nervous system. Parasympathetic stimulation causes constriction while sympathetic stimulation causes dilation. The following functions continue as in the upper airways.

- ❖ Warming and humidifying
- ❖ Supporting and potency
- ❖ Removal of particulate matter
- ❖ Cough reflex

### **Respiratory Bronchioles and Alveoli**

The terminal bronchus continues as respiratory bronchioles, alveolar ducts and alveoli at the distal end. The lobules are the blind ends of the respiratory tract. The exchange of gases during respiration takes place across two membranes - alveolar and capillary membrane.

### **Functions of respiratory bronchioles and alveoli**

1. External respiration
2. Defence against microbes

## **Lungs**

Lungs are paired organs of respiration. They are situated one on each side of the mediastinum within the thoracic cavity. Each lung resembles a half cone. It has an apex, a base, medial surface and costal surface.

Lungs are highly vascularized and the structures that enter and leave at the hilum are 1 bronchus, 1 pulmonary artery, 2 pulmonary veins, 1 bronchial artery, 1 bronchial vein, lymph vessels, parasympathetic and sympathetic nerves. The area between the lungs is the mediastinum which is occupied by heart, great vessels, trachea, right and left bronchi, oesophagus, lymph nodes, lymph vessels and nerves. The main function of the lung is to provide gas exchange during the respiratory process.

## **Pleura and Pleural Cavity**

Each lung is covered by the pleural cavity. The pleura is a double layered membrane comprised of inner pulmonary pleura and outer parietal pleura. The pulmonary pleura surrounds the lung whereas the parietal pleura lines over the thoracic cavity. The space between the two membranes is called as pleural space which is filled with a liquid called pleural liquid.



## **RESPIRATION**

Respiration is the process which delivers oxygen to the lungs and removes carbon-dioxide from the lungs. This process is achieved by two mechanisms of the lungs namely inspiration and expiration. Inspiration is the process of breathing in through which oxygen from the atmosphere enters the respiratory system of the body. Expiration is the process through which the carbon –dioxide is released from the body to the atmosphere.

### **Muscles of Respiration**

During the process of inspiration expansion of the chest occurs which is accomplished by voluntary and involuntary muscles. In normal conditions during quiet breathing the inter costal muscles and the diaphragm are involved., whereas during any abnormal conditions when there is difficulty in breathing, muscles of the neck, shoulder and abdomen assists the process.

### **Cycles of Respiration**

This occurs 12-15 times per minute and consists of three phases.

- ❖ Inspiration
- ❖ Expiration
- ❖ Pause

### **Physiology Variables Affects Respiration**

#### **Elasticity**

Elasticity is one of the factors that affect the physiology of respiration. Loss of elasticity of the connective tissue in the lungs causes forced expiration with increased effort of inspiration. The elastic recoiling reduces with the increase

in the age. It may be also seen in some pathological conditions such as emphysema.

### **Compliance**

This is the measure of distensibility (stretchiness) of the lungs, i.e., when the compliance is low, the effort required to inflate the alveoli is greater than normal e.g. in some diseases where elasticity is reduced or when surfactant is present insufficiently. Some clinical conditions such as pulmonary fibrosis worsen this condition.

### **Air flow resistance**

Resistance refers to the obstruction of the airflow. When the air flow resistance is increased, it may lead to bronchospasm e.g. in broncho constriction, which needs more respiratory effort to inflate the lungs.

### **Lung volumes and capacity**

In normal quiet breathing there are about 15 complete respiratory cycles per minute. The lungs and air passages are never empty, since the exchange of gases occurs only across the wall of the alveolar ducts and alveolar. The remaining capacity of the respiratory passages is described as anatomical dead space (about 150ml).

### **Tidal Volume**

It is the amount of air which is inhaled and exhaled out of the lungs during each of quiet breathing about 500ml.

### **Inspiratory Reserve Volume**

It is the additional volume of air that can be inhaled into the lungs during maximal inspiration.

### **Inspiratory Capacity**

It is the volume of air inhaled additionally after normal expiration. It is the sum of tidal volume and inspiratory reserve volume.

### **Functional Residual Capacity**

It is the volume of air remaining in the air passages and alveoli at the end of quiet respiration. The functional residual volume also prevents the alveolar collapse during expiration..

### **Expiratory Reserve Volume**

It is the largest volume of air which can be exhaled from the lungs during maximal expiration.

### **Vital Capacity (VC)**

It is the maximum volume of air which can be moved into and out of the lungs.

### **Residual Volume**

Residual volume is the volume of air remaining in the lungs after forced expiration. It cannot be measured directly. Residual volume is elevated in certain pathological conditions such as asthma and obstructive emphysema.

$$VC = \text{Tidal Volume} + \text{IRV} + \text{ERV}.$$

### **Alveolar Ventilation**

$$\text{Alveolar ventilation} = (\text{TV} - \text{anatomical dead space}) \times \text{respiratory rate}$$

$$= (500-150) \text{ ml} \times 15 \text{ per minute} = 5.25 \text{ liters / minute.}$$

Lungs function tests are carried out as a routine practice for determining the respiratory function and these tests are based on the parameters outlined above.

### **External Respiration**

External respiration is the mechanics of breathing and exchanging gases between alveoli and blood. Total area of gas exchange in the lungs is 70-80 square meters. CO<sub>2</sub> diffuses from venous blood along the concentration gradient into the alveoli until it equilibrates with the alveolar air. The oxygen diffuses from the alveoli into the blood by the same mechanism.

### **Internal Respiration**

Internal respiration deals with the transport of oxygen from the lungs to the cells as well as transport of the CO<sub>2</sub> from the cells to the lungs. When there is difference in partial pressures, oxygen diffuses outward from the blood to extracellular fluid then into the cell walls. The process involved is diffusion.

### **Control of Respiration**

Control of respiration is normally an involuntary action. In certain instances such as speaking and singing, the voluntary control is exerted, but it can be overridden if homeostasis of arterial PO<sub>2</sub> and PCO<sub>2</sub> is threatened. i.e. if this is high arterial PCO<sub>2</sub> or low arterial PO<sub>2</sub>.

## **THE RESPIRATORY CENTRE**

This is formed by group of nerve cells that control the rate and depth of respiration. They are situated in

- ❖ Brainstem
- ❖ Medulla oblongata
- ❖ Pons varoli

### **Chemoreceptor**

These are the receptors that respond to the changes in  $PO_2$  and  $PCO_2$ . Chemoreceptors are distributed in the body centrally as well as peripherally. Central receptor are located on the surface of medulla oblongata and they are bathed in CSF whereas the peripheral chemoreceptors are situated in the arch of aorta and in the carotid bodies.

Others factors influencing respiration are,

- ❖ Speech, singing
- ❖ Emotional displays
- ❖ Drugs e.g. - sedatives, alcohol
- ❖ Sleep

Temperature has an effect on breathing. During fever, respiratory rate is increased due to increased metabolic rate and hyperthermia. But, during hypothermia, where is decreased metabolic rate it is decreased. Temporary changes in respiration may occur during physical activities such as swallowing, sneezing and coughing.

## **BRONCHIAL ASTHMA**

### **Asthma:**

The word asthma is derived from a Greek word which means 'breathless' or 'to breathe with the open mouth'.

Asthma is a syndrome which is characterized by airflow obstruction that varies markedly, both spontaneously and with treatment. Asthmatics harbor a special type of inflammation in the airway passages that makes responsive than non-asthmatics to a wide range of triggers, leading to excessive narrowing of airway passages with consequently reduced airflow accompanied by symptomatic wheezing and dyspnea. Narrowing of airways is usually reversible, but it can be often irreversible in some patients with chronic asthma.

### **Prevalance and etiology:**

Asthma is one of the common diseases prevailing with immense social impact. Although, bronchial asthma occurs at all ages it is predominantly seen in early life. About one-half of cases develop before 10 years of age and other one third of the cases develop illness before age 40 years of age. Asthma that has its onset in early life tends to have a strong allergic component rather than the asthma that developed in later ages. The asthma developed in latter ages tends to be non-allergic or to have a mixed etiology. In fact, asthma is a heterogenous disease with multiple aetiologies such as genetic (atopic), environmental factors such as viruses, occupational exposures and allergens.

Atopy is the major risk factor for the development of asthma. Allergic asthma is often associated with a personal and /or family history of allergic diseases. It is characterized by elevated levels of IgE in the serum; and /or with a positive response to provocation tests involving the imbalance of specific antigen.

There are several other factors that have been implicated in the etiology of asthma, which includes lower maternal age, breast-feeding, prematurity and low birth weight, and inactivity but these are unlikely to contribute to the recent global increase prevalence of asthma.

### **Pathogenesis:**

Asthma is associated with a specific chronic inflammation of the mucosal layer of the lower airways. One of the main aims of treatment is to suppress this inflammation.

Histological lesions that are commonly seen in the asthma patients are hypertrophy of the bronchial smooth muscle, hyperplasia of mucosal and submucosal vessels. Denudation of the surface epithelium due to edema of the mucosal layer is seen. A significant thickening of the basement membrane is more evident. Eosinophilic infiltration is seen in the affected bronchial wall.

### **Pathology:**

When a pathogen enters the system both innate and adaptive immune system will be activated to protect the host. The airway mucosa is highly vascularized. In case of asthma patients, the respiratory tract is highly insulted

and it undergoes lot of immunological and pathological changes to save the host. So, in a case of asthma patients, more eosinophil counts will be seen as part of pathological response. Also a part of immunological response active T-cells and mast cells will be seen in the circulation. Also, it has to be noted that the degree of inflammation is now always in correlation with the disease severity and may be found in atopic patients without asthma symptoms. One of the important pathological lesion is the thickening of the basement membrane which is due to the epithelial collagen deposition. This condition is also seen in the patients with eosinophilic bronchitis presenting as cough who do not have asthma. Due to thickening, the epithelium is often shed or friable with increased number of epithelial cells in the lumen. One of the most common findings in fatal asthma is occlusion of the airway lumen by a mucous plug which is accompanied by thickened and edematous airway with vasodilation and angiogenesis.

The pathology of asthma is remarkably uniform and independent of different types of asthma, including atopic, non-atopic, occupational, aspirin-sensitive and pediatric asthma. These pathologic changes are restricted only to the airways and do not extend to the lung parenchyma. Patients suffering from severe asthma have pronounced airway inflammation.

### **Pathophysiology:**

Airflow is obstructed because of bronchoconstriction, edema, vascular congestion and luminal occlusion with exudate. These pathological changes have an impact on the respiratory rate and result in a reduction of forced expiratory



volume in 1s ( $FEV_1$ ),  $FEV_1$  / FVC ratio, and peak expiratory flow (PEF), as well as an increase in airway resistance. Ventilatory failure is very uncommon even in severe asthmatic patients, and arterial  $PaCO_2$  tends to be low due to increased ventilation.

### **Airway hyperresponsiveness:**

AHR is one of the characteristic physiologic abnormalities noticed in asthmatics. The increase in AHR is linked to the frequency of asthma symptoms, thus the main objective of the therapy is to reduce AHR. Generally, most of the triggers for asthma symptoms appear to act indirectly.

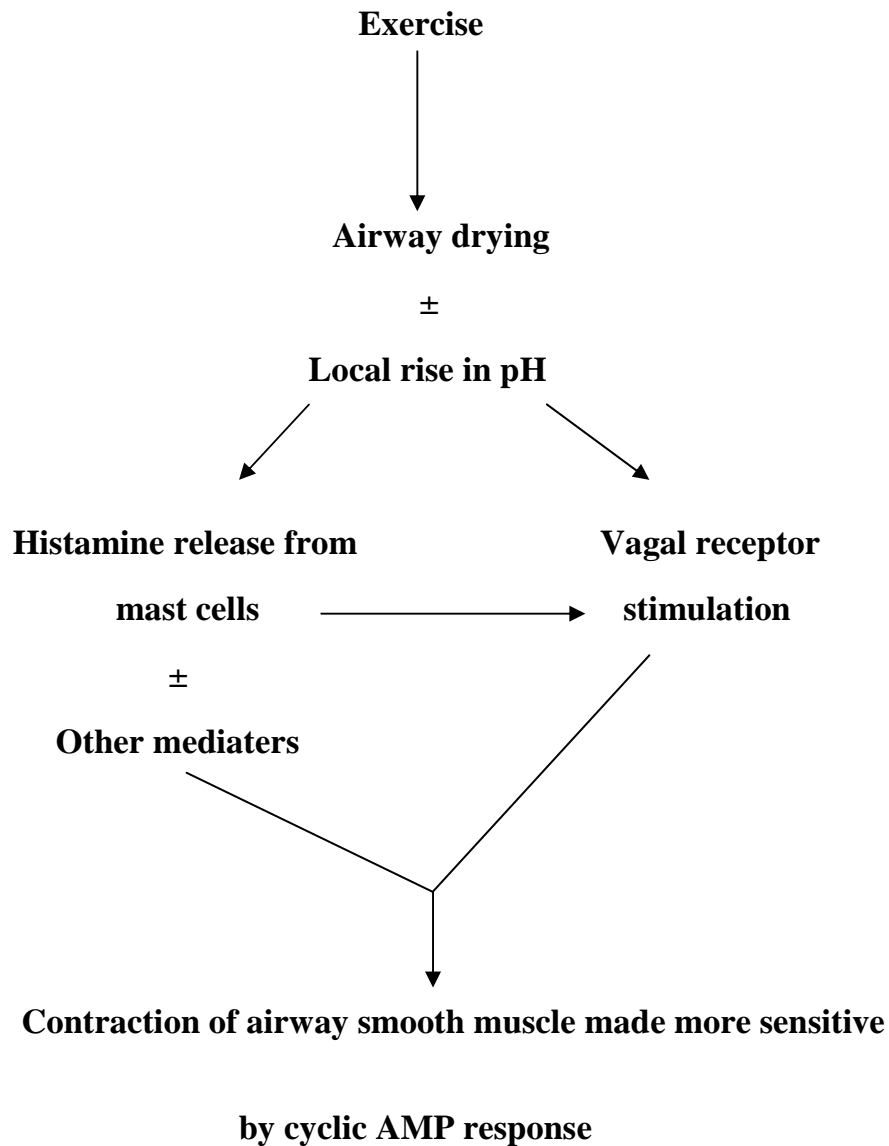
### **Mediators of the asthmatic reaction:**

The consequences of asthmatic reaction is associated with the release of mediators from mast cells and other inflammatory cells. These mediators act on the bronchial wall. Mediator response could be triggered by immunological reactions involving IgE and other factors such as exercise, infection and drugs. Mediators act on the target cells located in the bronchial wall and this reaction could be modified by the nerves supplying that structure as well as the liability of cells to produce mediators under humoral, nervous or genetic control. The mediators are histamine, leukotrienes, leucocyte chemotactic factor, platelet activating factor, kinin and prostaglandins.

## Simple models of asthmatic mechanisms:

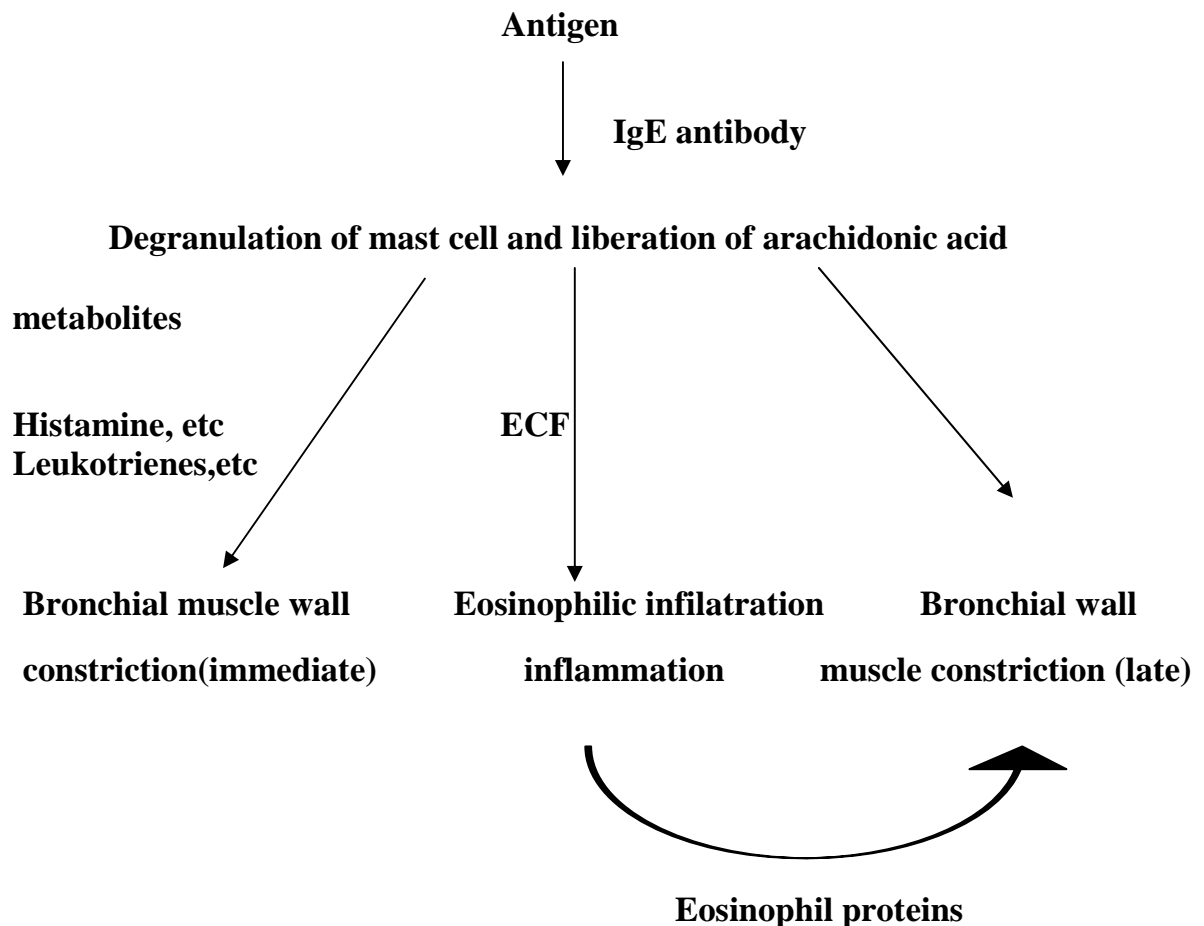
### Exercise and hyperventilation:

#### Scheme for the mechanisms of exercise induced asthma



### Antigen challenge:

The scheme for the mechanism of response to inhaled antigen is represented as follow.



### **Challenge with mediators:**

Intake of histamine by inhalation provokes an immediate increase in the airflow obstruction. This can be blocked by prior administration  $H_1$  and  $H_2$  blockers by inhalation. The inhalation of prostaglandin  $D_2$  and  $F_{2\alpha}$  and leukotrienes  $C_4$  and  $D_4$  has shown similar effects, of course even more potent than histamine on the asthmatic airway.

### **Immunological mechanisms:**

In an atopic individual who has been predisposed to antigen challenge, react to it by the production of IgE from B lymphocytes. In instances of such challenges IgE- antigen complexes are formed which bind to the surface of

basophils, mast cells and macrophages. Release of pre-formed mediators such as histamine and eosinophil chemotactic factors stimulates the influx of eosinophils which causes bronchoconstriction. Release of other inflammatory mediators leads to oedema due to infiltration of the bronchial wall, with toxic substances such as major basic protein and platelet activating factors which causes disruption of epithelial cells. The macrophages releases certain enzymes which causes the characteristic separation of the epithelium from the basement membrane.

### **Neural mechanisms:**

There are three components of the autonomic nervous system which play a critical role in controlling the airways and their secretions; the parasympathetic system via the vagus, the sympathetic system via its hormonal control of cyclic AMP levels, and the peptidergic or non-adrenergic non-cholinergic system.

### **Parasympathetic control:**

The vagus nerve includes afferent fibres from sensory receptors in the bronchial epithelium. The stimulation of these receptors by inflammatory mediators like bradykinin and histamine stimulates the release of acetylcholine and causes bronchoconstriction. Bronchial glands are also under the control of parasympathetic system and stimulation of the vagus nerves can also lead to mucous secretion.

**Sympathetic control:**

The lung receives sympathetic innervation mainly via the stellate ganglion. Sympathetic system plays a major role in influencing the bronchial tone.

**Peptidergic control:**

The non-adrenergic and non-cholinergic fibres of the nervous system run along with the vagus and supply post-ganglionic fibres to bronchial muscle glands and vessels. They inhibit the innervation to smooth muscle and also stimulate water and ion secretion into the respiratory airway.

**Bronchial muscle:**

The contractile mechanism of bronchial smooth muscle is achieved due to the ability of the proteins actin and myosin to slide over one another and to couple together. Calcium plays a predominant role in the contraction of smooth muscle.

**Genetic factors:**

The risk of having an asthmatic child is greater if both parents suffer from asthma. Many research studies has proved that asthma is inherited as an autosomal dominant character.

**Provoking factors of asthma:**

Exercise, infection, emotional upsets, allergens, seasonal variation, pollen grains or spores can provoke asthma. House dust, animals and pollen rarely can cause asthmatic attacks without other allergic symptoms. Certain foods or drinks

may worsen the condition. It is always important to investigate possible allergic factors and try to eliminate it.

Aspirin, non-steroidal anti-inflammatory drugs, beta blockers, tartrazine in drugs may occasionally cause asthmatic attacks.

### **Infection:**

Viral or bacterial infections in childhood may predispose and triggers the development of asthma and bronchial hyper- reactivity in later life. The predisposing pathogenic organisms may be of viruses such as influenza, rhinovirus and respiratory syncytial virus, together with the bacteria such as *Mycoplasma pneumoniae*. Infection with pyogenic bacteria rarely causes acute exacerbations of asthma.

### **Air pollution:**

Asthmatic patients may notice exacerbations in response to episodes of pollutants circulating in the atmospheric air. In a high traffic area, there is a risk of photochemical smog. The sunlight and temperature adversely affects the ozone layer and releases oxidants which act as respiratory irritants. Bronchoconstriction may occur due to high concentration of sulphur dioxide present in smogs.

More local sources of pollution, such as gas cookers which contain oxides of nitrogen or side stream tobacco smoke may also act as irritants.

**Smoking:**

Smokers are at the level of high risk in developing asthma and they are hyper-reactive. In fact smokers are not only affected, but their children were also found to be at a higher risk of developing wheezing and are prone for respiratory problems.

**Psychological factors:**

There are some studies which revealed that psychological events such as shock, bereavement or excitement can provoke asthma. The autonomic nervous system mediates the reactions responsible for inducing asthma.

**Gastro-oesophageal reflux:**

Gastro-oesophageal reflux also provokes wheezing and heartburns. But this is not seen in majority of the asthmatics. Drinking of drinks, such as colas, fruit juices and iced water may produce similar effects. Anti-reflux therapy fails to reduce asthma symptoms in most patients.

**Hormonal factors:**

Some women show premenstrual worsening of asthma, which can occasionally be very severe. In fact, thyrotoxicosis and hypothyroidism can worsen asthma, although the mechanism of action is unclear.

**Physical factors:**

There are many physical factors which can induce asthma or even worsen the condition. Cold air and hyperventilation may trigger asthma through the similar mechanism of action as that of exercise. Even, laughter may also be a trigger. Weather changes have a negative impact on the asthma patients, in fact many patients report worsening of asthma in hot weather. Sometimes even exposure to perfumes or strong smells may worsen the condition.

**Occupational factors:**

Work- related factors are important provokes of asthma in a minority of patients. During work some persons were unknowingly exposed to low molecular weight components which acts as a trigger to initiate asthma. In such cases even after the cessation of the exposure, the problem continues.

Some of causes of occupational asthma are mentioned below.

**Causes of occupational asthma of animal origin:**

<b>Agent</b>	<b>Occupation</b>
Cats, dogs, horses	Veterinarians
Rats, mice, guinea-pigs	Laboratory workers
Cotton	Agricultural industry workers
Grain mites	Farmers
Cement	Industry workers



Locusts	Research workers
Moths, silkworms, flies	Breeding
Pigeons, chickens	Breeding, farming
Oyster, prawn, crab	Food production

### **Clinical features:**

The common asthmatic symptoms include a triad of dyspnoea, coughing and wheezing. All three symptoms coexist in the typical form of the disease. At the onset of asthmatic attack, patients experience a sense of constriction in the chest region, often accompanied with non-productive cough. Harsh respiration with audible sounds; wheezing in both phases of respiration becomes prominent, prolonged expiration along with tachycardia, tachypnea, and mild systolic hypertension. The lungs rapidly become over inflated as a result of this the anteroposterior diameter of the thorax increases. In cases of severe or prolonged attack, there may be loss of adventitious breath sounds, and very high pitched wheezing occurs. These two signs that are used as indicators for identifying the severity of obstruction. As a result of this, the accessory muscles become visibly active and paradoxical pulse develops. The development of a paradoxical pulse is dependent on the generation of large negative intrathoracic pressure.

The end of an episode is usually marked by a cough with thick and stringy mucous. This takes the forms of casts of the distal airways (Curshmann's spirals).

On microscopic examination, eosinophils and Charcot-Leyden crystals can be visualized in the mucous. In extreme situations, wheezing may be depressed or even disappear, and cough may become extremely ineffective as a result the patient may begin a gasping respiration. These findings reveals that extensive mucous plugging may impede suffocation. Any mechanical means of ventilatory assistance may facilitate normal respiration. Durins asthmatic attacks, atelectasis may occur due to inspissated secretions from the respiratory tract. In certain cases, spontaneous pneumothorax and / or pneumomediastinum may occur but it is quite rare.

### **Episodic asthma:**

In this form of the disease the patient has no respiratory symptoms or signs between asthmatic episodes. Paroxysms of wheezing and dyspnoea may occur when exposed to allergens, exercise or viral infections. Attacks may be mild or severe and may last for hours, days or even weeks.

### **Severe acute asthma:**

This term has replaced 'Status asthmaticus'. Severe cough may be present which aggravates the respiratory distress, tachycardia, pulsus paradoxus and causes sweating. In very severe cases, central cyanosis, bradycardia , and 'silent chest' may occur. During an attack the chest is usually held near the position of full inspiration and the percussion note may be hyper-resonant. During physical examination, numerous high-pitched polyphonic expiratory and inspiratory bronchi which are vesicular in character with prolonged expiration is heard.

### **Grading of severity of acute asthma – Adapted from Sherwood Jones:**

**Grade 1 A** - Able to carry out housework or job with moderate difficulty. Sleep is occasionally disturbed.

**Grade 1 A** - Only able to carry out housework or job with great difficulty. Sleep frequently disturbed.

**Grade 2 A** - Confined to chair or bed, but able to get up with moderate difficulty. Sleep disturbed, with little or no relief from inhaler.

**Grade 2 B** - Confined to chair or bed and only able to get up with great difficulty. Unable to sleep. Pulse over 120/min.

**Grade 3** - Totally confined to chair or bed. No sleep. No relief from inhaler. Pulse over 120/min.

**Grade 4** - Immobilized and completely exhausted.

### **Chronic asthma:**

Chronic asthma is a condition in the respiratory tract in affected with excessive mucus secretion. This condition is accompanied with inflammatory changes in the system. This causes irritation in the respiratory tract resulting in respiratory distress. Episodes of severe acute asthma can occur with symptoms of chest tightness, wheezing, shortness of breath, breathlessness and productive cough with mucoid sputum along with recurrent respiratory infections. Severe asthma persisting from childhood may cause a 'pigeon chest' deformity.

**Special considerations:****Aspirin – sensitive Asthma:**

For majority of population, taking aspirin does not cause any problems. Perhaps, a small portion of the population are affected on exposure of aspirin. Some persons become worse on exposure to aspirin or any other COX inhibitors. Aspirin – sensitive asthma is a well- defined subtype of asthma that is usually preceded by perennial rhinitis and nasal polyps is non-atopic patients with a late onset of the disease. Asthma is triggered by COX inhibitors but is persistent even in their absence.

**Pregnancy:**

Approximately one- third of asthmatic patients who are pregnant improve during the course of a pregnancy. Proper control of asthma during pregnancy will protect the mother and fetus from adverse reactions.

**Cigarette smoking:**

Smoking affects the asthmatics in multiple ways. Smoking interferes with the anti-inflammatory actions of corticosteroids thus it results in higher dose recommendation for asthma control. Smoking cessation improves the normal function of the lungs and reverses the steroid resistance. Some patients report a temporary worsening of asthma when they initially stop smoking, which could be due to the loss of the bronchodilating effect of nitric oxide in cigarette smoke.

**Bronchopulmonary Aspergillosis:**

Bronchopulmonary aspergillosis (BPA) is uncommon and results from an allergic pulmonary reaction to inhaled spores of *Aspergillus* species. *Aspergillus fumigatus* is one of the most common species. In this condition, there are eosinophilic infiltrations seen in the lungs, particularly in the upper lobes. The airway is blocked with mucoid plugs which is rich in eosinophils. So, when the affected patients cough they may show hemoptysis and brown plugs. BPA may result in conditions such as bronchiectasis, particularly affecting the central airway.

**Other complications of asthma:**

Prolonged intake of corticosteroids may cause growth retardation in children and facial changes, dystrophy of the skin, bruising, adrenal suppression and bone problems such as osteoporosis, vertebral collapse. In patients with osteoporosis, the fracture of ribs may occur during coughing. In rare instances, lung collapse may occur which is unrelated to aspergillosis. Acute attacks may rarely be complicated by pneumothorax, or subcutaneous or mediastinal emphysema. Chronic asthmatics may rarely develop pulmonary hypertension, cor pulmonale and chronic hypercapnia. In non-smoking chronic asthmatics right ventricular hypertrophy may occur.

**Physical findings and functional effects:**

The characteristic clinical findings that are common among asthmatics are polyphonic wheezing. The phenomenon by which wheezing is generated is

similar to that of the vibration caused in the wall of an airway on the point of closure of an woodrind instrument. The airway narrowing is caused by the smooth muscle constriction, increased mucosal oedema and mucosal plugging. These are primary alterations caused by asthmatic attack.

The secondary changes occurs in the gas exchange and alters the cardiac functions which are described as follows.

### **Changes in lung mechanics:**

The narrowing of airways reduces the air flow rates. When the air flow rates are measured by  $FEV_1$ , it shows the flow rates of different lung volumes derived from the flow-volume curve. This shows a reduction in the flow rate which is proportional to the severity of the attack. Inspiratory flow rates are reduced. The constriction of airways leads to an increase in (negative) pressure built-up within the thorax and with this the partial and widespread closure of small airways leads to an increased residual volume. Tidal expiratory flow rate approaches the maximal expiratory flow rate. During an acute asthmatic attack, there is an increase in total lung capacity.

### **Changes in gas exchange:**

Hypoxaemia is less severe in asthmatics because the local hypoxia with increased local alveolar pressure creates a compensatory mechanism of excessive physiological shunting. During hypoventilation, there is infrequency of segmental or subsegmental collapse which occurs due to collateral ventilation between acini, and maintains the air supply to the distal to the blocked bronchi.

The transfer factor for carbon monoxide is rarely reduced in asthma and in fact it rises during remissions. In asthmatic patients there is a direct relationship between FEV<sub>1</sub> and arterial PaO<sub>2</sub>. Lower the FEV<sub>1</sub> the lower is the PaO<sub>2</sub>. In most severe asthmatic attack, the arterial PaCO<sub>2</sub> is below normal.

### **Cardiac functions:**

Generally, asthma has no impact on cardiac function. But, in severe acute attack, tachycardia (increased cardiac rate) and pulsus paradoxus may occurs which indicates abnormality in the cardiac function. In addition, the pulmonary arterial pressure would be raised in both hypoxaemia and high intra-alveolar pressures. During severe asthma attacks the the lungs will be overinflated and it will lead to cardiac arrest and death is not uncommon.

### **Differential diagnosis:**

The differential diagnosis of bronchial asthma are

- Cardiac asthma
- Tropical eosinophilia
- Pulmonary tuberculosis
- Bronchitis

The factors which differentiates bronchial asthma from these diseases are listed as follows.

NO	FACTORS	CARDIAC ASTHMA	BRONCHIAL ASTHMA
1	Past history	Hypertension, aortic or coronary disease	Previous attacks of asthma or other allergic conditions In-patients of other members of the family
2	Age	Onset usually after 50 yrs	Any age
3	Precipitating factors	May be precipitated by exertion or acute myocardial infarction or hypertension	Trigger factors may be infected non -specific irritants, external, allergies, exercise or emotional factors
4	<b>Symptoms:</b>		
	a. Cough	Cough and dyspnoea, cough associated with watery expectoration which increases in intensity towards end of attacks.	Starts with dyspnoea, expectoration of small sticky sputum, paroxysm of wheezes when cough becomes profuse
	b. Wheezing	Rare	Usual
	c. Sweating	Prominent	Rare, unless status asthmaticus
5	<b>Signs:</b>		
	a. Inspection	Not active Normal	Active
	i. Accessory muscles of respiration		Emphysematous



	b. Palpation	Heart offers enlarged having palpable apex beat	Heart not enlarged, if long standing disease, right ventricular enlargement
	c. Auscultation	S <sub>2</sub> may be loud. Left ventricular gallop. Expiration not unduly prolonged, rales more than bronchitis, signs in early stage at base of the lungs, gradually ascending up with progress of the attack	Normal A <sub>2</sub> sound, right ventricular gallop is later feature of severe bronchial asthma. Expiration markedly prolonged rhonchi more than rales. Signs diffuse all over the lungs.
	d. Pulse	Full and bounding	Feeble and rapid
	e. B.P	Usually elevated	Normal or low
	f. Signs of underlying disease	Hypertension or coronary Disease	No evident of cardio vascular Disease
	h. Urine	Generally clear, then may be mild albuminuria.	Clear
6.	<b>Investigation:</b>  Eosinophil	None	Common

NO	FACTORS	BRONCHITIS	BRONCHIAL ASTHMA
1	Age	Children less than 5 years and old people	Usually starts before 3 yrs of age
2	Duration of symptoms	Variable	Long duration
3	Fever	Common	Rare
4	Loss of weight	Rare	Seldom
5	Cough and dyspnoea	Complicated by spasmodic dyspnoea, prolonged cough is in change of weather. More persistant dyspnoea.	Paroxysmal cough more than dyspnoea
6	Signs a. Inspection i. Accessory muscles of respiration ii. Shape of chest iii. Respiration	Active  Barrel shaped Expiration is prolonged	Active  Emphysematous Rapid with prolonged expiration
	<b>b. Palpation</b>	-	Movement of the chest wall is symmetrically diminished.
	c. Percussion	Hyper resonance , normal	Normal

	d. Auscultation Chest	Vesicular breath sounds and prolonged wheezing sounds.	Vesicular breath sounds and prolonged wheezing sounds.
	e. Pulse	Normal or low	Normal or low
	f. B.P	Normal or low	Normal or low
	g. Signs of underlying disease	No evidence of cardiovascular disease.	No evidence of cardiovascular disease.
	h. Sputum	Little sticky mucoid in nature	Sticky pellets in nature
	i. Urine	Clear	Clear
	Investigation Eosinophilia	Common	Common

### **Diagnosis and investigations:**

Diagnosis of asthma is commonly made based on the compatible clinical history in association with the variable airflow obstruction in ‘morning dipping’ of the peak expiratory flow.

In case if the above tests are negative, an exercise test, histamine or methacholine bronchial provocation test, occupational exposure test or trial of oral corticosteroids are required to confirm the case. An elevated sputum or peripheral blood eosinophil count or increased serum level of total or allergen specific IgE are clinical predictors in asthmatics.

### **Pulmonary function test:**

Measurement of the  $FEV_1$  and VC or PEF provides a fairly reliable indication about the degree of airflow obstruction. Serial recordings of PEF are useful in differentiating the patients with chronic asthma from those with COPD. In asthma, a diurnal variation in PEF is marked, the lowest values being recorded in the morning ('morning dipping').

Spirometry is the most common pulmonary function test performed to evaluate the lung functions of the lung based on the volume and speed of air inhaled and exhaled. The readings are obtained by a deep inspiration followed by the fastest possible and maximal expiration. Spirometer is the instrument to study the pulmonary function test.

The normal forced vital capacity (FVC) is fully exhaled in less than 3 seconds more than three quarter is exhaled in the first second. The first expiratory volume  $FEV_1$  can be measured and the ratio  $FEV_1/FVC$  varies among age, height and ethnic group and is normally found to be greater than 75%.

In an obstructive pattern of chronic bronchitis and emphysema the length of expiration is prolonged and  $FEV_1$  is much reduced. In asthmatics this obstruction may be relieved by effective treatment with bronchodilators or corticosteroids.

In restrictive pattern,  $FEV_1$  is normal since there is no obstruction to airflow.

**Lung volumes:**

Measurements of total lung capacity and residual volume can be measured by helium dilution method using a whole body plethysmograph. Helium dilution methods measures the functional residual capacity whereas, plethysmograph is an instrument used to measure the changes in the volume of an organ or the body. In general, obstructive defects lead to elevated higher values and restrictive defects to decreased and lower values.

**Measurement of diffusing capacity:**

Lung diffusion testing measures the exchange of gases in the lungs. The diffusing capacity (DLCO) is a measure of the lung's ability to transfer gas from alveoli to blood. The diffusing capacity is reduced in diseases such as fibrosing alveolitis or emphysema and elevated in conditions such as alveolar hemorrhage.

**Arterial blood gases and oximetry:**

The degree as well as type of respiratory failure and measuring overall acid-base status can be assessed by measuring hydrogen ion concentration  $\text{PaO}_2$  and  $\text{PaCO}_2$ . Use of a pulse oximeter in assessing oxygen saturation of hypoxaemic patient plays a vital role for inpatients who require continuous monitoring.

**Skin-prick test:**

Skin-prick test is used to identify the cause of allergies. This test can be used as a diagnostic tool may be useful for tracking down suspected clinical cases provoking factors of asthma. This test can be performed based on the case history

and should include a control solution and the most common allergens such as house dust and grass pollen. The skin-prick test is performed by placing a drop of allergen on the skin, usually the front surface of the forearm and lifting the skin slightly through the drop with the point of an intradermal needle without drawing the blood. After 15-20 minutes, if the skin develops wheal (a red, raised itchy area) , it is considered as positive result when compared to the size obtained with the control solution. Bronchial sensitivity may sometimes be present in the absence of skin sensitivity and in such case RAST testing may be useful.

### **Challenging test:**

In this test, the patient is exposed to factors that provoke asthma for a period of four to eight times on daily basis. The effect of the challenges is most conveniently monitored by peak flow rate. The measurement should be carried out at regular intervals such as 5-10minutes 30 minutes, 3-4 hours and lasting about 24 hours after challenge. Sometimes, it may require corticosteroids. Challenge tests are of course are affected by drugs like chromoglycate and corticosteroids. In this situation, two types of challenge test may be occasionally be necessary. They are drug related asthma and other is the challenge test related to investigation of food allergy.

### **Sputum Examination:**

Sputum eosinophilia is a very important diagnostic indicator of an asthmatic type of airway reaction. Eosinophils are a prominent type of cells seen in the inflammatory exudates. The lumen within the airway is lined with a thick

tenacious mucus. When this mucus is visualized under a microscope it has strips of desquamated epithelial cells (Curschman's spirals) eosinophils, isolated metaplastic epithelial cells (Creola bodies) & crystalline materials consisting largely of major basic protein derived from eosinophilic granules (Charcot - leydon crystals).

### **Radiological features:**

In most asthma patients the chest radiograph is normal with thickened bronchial wall. Slight overinflation, accompanied with depressed diaphragm, along with laterally spreaded ribs and enlarged reterosternal air space may be seen in some patients during an attack and in some cases of chronic severe asthma. In contrast to emphysema, the diaphragm normally retains its upwardly convex curvature and the pulmonary vessels do not show the same degree of attenuation.

### **Prognosis**

In general, the prognosis of the individual attack is good, except in severe acute asthma. In severe acute asthma cases, there is occasionally a fatal outcome, in case of inadequate or delayed treatments. Seasonal fluctuations also has an impact on the intensity of disease outcome in the both types of asthma. Atomic subject with episodic asthma are usually worse in the summer, when they are more heavily exposed to antigens, while chronic asthmatics are usually worse in winter months, because of the increased frequency of viral infections.

## **Prevention**

### **Avoidance of allergens**

There are few instances, in which a single agent is identified as the ultimate cause for asthmatic attack. These allergens include grass pollens, mites, animal dander, drugs, industrial chemicals such as isocyanates and certain ingredients in the normal diet. The majority of patients are hypersensitive to a wide range of allergens and attempts to avoid all of them are impracticable.



## **MATERIALS AND METHODS**

### **Clinical Study :**

The study of Manthara kasam was undertaken in Post Graduate department of Pothumaruthuvam, Govt Siddha Medical College, Palayamkottai.

Twenty patients were admitted for study period and treated with the trail drug. Based on their severity they were admitted as In-patients and followed up as out patients.

The medicine was also subjected to trial with 20 out patients.

### **Selection of Patients:**

The criteria for case selection was unproductive cough, breathlessness, tightness of chest, wheezing and expectoration of scanty, mucoid sputum.

Detailed history of the patient contains past, personal and family histories, diet habits, socio-economic status, smoke, dust, cold and occupational history.

### **Diagnosis:**

Siddha methods of diagnosis were employed with following methods:

- ❖ Mukkutra nilaigal
- ❖ Envagai thervugal
- ❖ Nilam
- ❖ Kaalam
- ❖ Udal kattugal

❖ Poriyal Arithal

❖ Pulanal Arithal

❖ Vinathal

### **Investigations:**

❖ Blood test (TC, DC, ESR, Hb, Sugar, Urea, and Cholesterol)

❖ Urine Analysis (Albumin, Sugar, Deposits)

❖ Sputum for AFB

❖ X ray chest PA view

❖ Pulmonary Function Tests.

Biochemical Analysis, Bronchodilator Activity and Microbiological Activities were done to establish the efficacy of the trial medicine.

### **Treatment**

The trial medicine used in the present clinical study is

**Thakkolathi chooranam** – 3 gm thrice a day after meals with hot water

All the patients were adviced strictly to follow the pathiyam (Dietary regimen), pranayamam and mild yogic exercises. So that the disease does not recur.

## **RESULTS AND OBSERVATIONS**

Results were observed with respect to the following criteria

1. Sex distribution
2. Age distribution
3. Kaalam distribution
4. Constitution of body
5. Religion distribution
6. Gunam distribution
7. Thinai distribution
8. Paruvakaalam distribution
9. Occupation distribution
10. Aetiological factors
11. Socio-economic status
12. Food habits
13. Family history
14. Habits
15. Clinical manifestation

16. Other system involvement
17. Mode of onset
18. Duration of illness
19. Gnanendhiriyam
20. Kanmenthiriyam
21. Mukkutram a)Vadham b)Pitham c) Kabam
22. Ezhu Udal Kattugal
23. Envagai Thervugal
24. Neerkuri
25. Neikuri
26. Laboratory analysis
27. Pulmonary function test report before and after treatment
28. Respiratory rate
29. Gradation of results

For this study 20 In-patients and 20 Out-patients were selected.

## 1. SEX DISTRIBUTION.

Table1 illustrates the distribution of sex

Sl. No	Sex	No. of Cases		Percentage (%)	
		OP	IP	OP	IP
1.	Male	14	14	70%	70%
2.	Female	6	6	30%	30%

From the table it is observed that Swasakasam occurred more among male population.

## 2. AGE DISTRIBUTION.

Table 2 illustrates the distribution of age.

Sl. No	Age groups in years	No. of .cases		Percentage (%)	
		OP	IP	OP	IP
1.	13 to 20	2	-	10%	-
2.	21 to 30	1	-	5%	-
3.	31 to 40	1	-	5%	-
4.	41 to 50	1	1	5%	5%
5.	51 to 60	13	14	65%	70%
6.	61 to 70	2	5	10%	25%

From the table it is observed that the highest incidence of Manthara kaasam was among the age group of 51-60.

### 3. KAALAM

Table 3 illustrates the distribution of Kaalam

Sl. No	Kaalam	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Vatham 1-33 years	3	-	15%	-
2.	Pitham 34-66 years	17	20	85%	100%
3.	Kabam 67-100 years	-	-	-	-

The table showed that the highest incidence of Manthara kaasam in pitha Kaalam.

### 4. CONSTITUTION OF BODY

Table 4 illustrates the distribution of Thegi

Sl. No	Constitution of body	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Vatha thegi	5	9	25%	45%
2	Pitha thegi	2	-	10%	-
3.	Kaba thegi	8	10	40%	50%
4.	Thontha thegi	5	1	25%	5%

From the table & it is observed that Kaba thegis registered high incidence of Manthara kaasam.

## 5. RELIGION

Table 5 illustrates the distribution of Religion

Sl. No.	Religion	No. of. Cases		Percentage (%)	
		OP	IP	OP	IP
1.	Hindu	17	17	85%	85%
2.	Christian	2	2	10%	10%
3.	Muslim	1	1	5%	5%

From the table it is observed that Manthara kaasam occurred more among in Hindus.

## 6. GUNAM

Table 6 illustrates the distribution of gunam

Sl. No.	Gunam	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Sathuva Gunam	-	-	-	-
2.	Rajo Gunam	20	20	100%	100%
3.	Thamo Gunam	-	-	-	-

In both OP and IP study cent percentage belongs to Rajo Gunam.

## 7. THINAI.

Table 7 illustrates the distribution of the disease among the Thina

Sl. No.	Thinai	No. of Cases		Percentage (%)	
		OP	IP	OP	IP
1.	Kurinji	8	4	40%	20%
2.	Mullai	7	8	35%	40%
3.	Marutham	-	-	-	-
4.	Neithal	5	8	25%	40%
5.	Paalai	-	-	-	-

The table indicated that kurinji, mullai and neithal were the places of incidence of the disease.

## 8. PARUVAKAALAM

Table 8 illustrates the distribution of the disease among the Paruvakaalam.

Sl. No.	Paruvakaalam	No. of Cases		Percentage (%)	
		OP	IP	OP	IP
1.	Elavenil Kaalam	-	-	-	-
2.	Muthuvenil kaalam	6	3	30%	15%
3.	Kaar Kaalam	14	12	70%	60%
4.	Koothir Kaalm	-	5	-	25%
5.	Munpani Kaalm	-	-	-	-
6.	Pinpani Kaalam	-	-	-	-

The table showed the prevalence of disease under Kaar kaalam.

## 9. OCCUPATION

Table 9 illustrates the distribution of occupation among the patients.

Sl. No.	Occupation	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Agri Labour	5	11	25%	55%
2.	Students	2	-	10%	-
3.	Beedi Maker	1	-	5%	-
4.	House Wife	3	3	15%	15%
5.	Mechical engineer	0	1	-	5%



6.	Chemical exposure	1	-	5%	-
7.	Manson	2	-	10%	-
8.	Cement factory	2	2	10%	10%
9.	Grocery stores	3	1	15%	5%
10.	Sweeper	-	1	-	5%
11.	Policeman	1	1	5%	5%

The table indicated increased incidence of the disease in agricultural labour and House Wife.

#### 10. AETIOLOGICAL FACTORS.

Table 10 illustrates the Aetiological factors for disease.

Sl. No.	Aetiological Factors	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Smoking	11	12	55%	60%
2.	Dust & Cold exposure	7	6	35%	30%
3.	Husk of grains & Air pollution	2	2	10%	10%

The above table showed Smoking was the main aetiological factors among the Patients.

## 11. SOCIO-ECONOMIC STATUS.

Table 11 illustrates the socio economic status of the patients.

Sl. No.	Socio- Economic Status	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Low class	11	16	55%	80%
2.	Middle class	9	4	45%	20%
3.	High class	-	-	-	-

From the table it is observed that the disease occurred more among low class.

## 12. FOOD HABITS.

Table 12 illustrates the distribution of diet among the patients.

Sl. No.	Food habits	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Vegetarian diet	4	3	20%	15%
2.	Mixed diet	16	17	80%	85%

The table showed that highest incidence of the disease for the patients with mixed diet.

## 13. FAMILY HISTORY

Table 13 illustrates the distribution of family history.

Sl. No.	Family History	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Positive	2	1	10%	5%
2.	Negative	18	19	90%	95%

In Op 90% have no family history and in Ip 95% have no family history.

#### 14. HABITS:

Table 14 illustrates the distribution of Habits

Sl. No.	Habit	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Smoker	10	13	50%	65%
2.	Tobacco chewer	2	1	10%	5%
3.	Betel nut chewer	-	2	-	10%
4.	Alcoholic	2	1	10%	5%
5.	No such habits	6	3	30%	15%

The table showed that highest incidence of the disease in the smokers.

#### 15. CLINICAL MANIFESTATION:

Table 15 illustrates the distribution of clinical manifestation

Sl. No.	Symptoms	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Running nose	4	6	20%	30%
2.	Sneezing	5	4	25%	20%
3.	Difficulty in Breathing	20	20	100%	100%
4.	Cough without expectoration	20	20	100%	100%
5.	Tightness of chest	4	6	20%	30%
6.	Cyanosis	-	-	-	-
7.	Sweating	2	-	10%	-
8.	Tachycardia	-	-	-	-
9.	Fever	-	-	-	-
10.	Eosinophil	9	6	45%	30%

The table shows that most of the patients had Difficulty in breathing, cough without expectoration.

## 16. OTHER SYSTEM INVOLVEMENT

Table 16 illustrates the distribution of co existing symptoms involving other systems.

Sl. No.	Other system involvement	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Cardiovascular System	-	-	-	-
2.	Gastro Intestinal System	3	2	15%	10%
3.	Musculo Skeletal System	4	3	20%	15%
4.	Central Nervous System	-	-	-	-

The table showed that Musculo skeletal system & Gastro skeletal system were affected more than other system.

## 17. MODE OF ONSET

Table 17 illustrates the distribution of Mode of onset of the disease.

Sl. No.	Mode of onset	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Acute	4	-	20%	-
2.	Chronic	16	20	80%	100%

The table showed that the mode of onset was chronic in most of both In patients and Out patients.

## 18. DURATION OF ILLNESS

Table 18 illustrates the distribution of duration of illness.

Sl. No.	Duration of illness	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Upto 6 months	13	12	65%	60%
2.	6 months – 2 years	2	7	10%	35%
3.	2 years – 6 years	3	-	15%	-
4.	6 years – 10 years	1	1	5%	5%
5.	10 years – 15 years	-	-	-	-
6.	15 years – 25 years	1	-	5%	-

Among the patients the highest incidence for the duration of illness is upto 6 months.

## 19. IMPORIGAL (GNANENDHIRIYAM)

Table 19 illustrates the distribution of disease with Imporigal.

Sl. No.	Imporigal (Gnanendhiriyam)	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Mei	-	-	-	-
2.	Vai	1	-	5%	-
3.	Kann	-	-	-	-
4.	Mookku	10	7	50%	35%
5.	Sevi	-	-	-	-

The table showed that Mookku was affected in most of the patient.

## 20. KANMENTHIRIYAM

Table 20 illustrates the distribution of disease with Kanmenthiriyam.

Sl. No.	Kanmenthiriyam	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Kai	-	1	-	5%
2.	Kaal	3	3	15%	15%
3.	Vai	1	-	5%	-
4.	Eruvai	8	7	40%	35%
5.	Karuvai	-	-	-	-

The table showed that Eruvai was affected in most of the patients

## 21. MUKKUTRAM

### 21.a Derangement of vatham.

Table 21.a illustrates the distribution of vatham.

Sl. No.	Vatham	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Piraanan	20	20	100%	100%
2.	Abaanan	8	7	40%	35%
3.	Viyaanan	3	8	15%	40%
4.	Uthaanan	15	16	75%	80%
5.	Samaanan	12	14	60%	70%
6.	Naagan	-	-	-	-
7.	Koorman	-	-	-	-
8.	Kirukaran	14	11	70%	55%
9.	Devaththan	11	12	55%	60%
10.	Dhananjayan	-	-	-	-

In all the In patients & Out patients Piraanan was affected.

### 21. b. Derangement of pitham.

Table 21. b illustrates the distribution of pitham.

Sl. No.	Pitham	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Anarpitham	12	14	60%	70%
2.	Ranjagam	-	-	-	-
3.	Sathagam	-	-	-	-
4.	Prasagam	-	-	-	-
5.	Aalosagam	-	-	-	-

The table shows most of the patients affected with Anarpitham.

### 21.c. Derangement of Kabam.

Table 21.c. illustrates the distribution of Kabam.

Sl. No.	Kabam	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Avalambagam	20	20	100%	100%
2.	Kiletham	8	7	40%	35%
3.	Pothagam	-	-	-	-
4.	Tharpagam	-	-	-	-
5.	Santhigam	3	11	15%	55%

The table showed that the Avalambagam was affected in all the patients in this disease.

## 22. Ezhu udal kattugal

Table 22. illustrates the distribution of derangement of ezhu udal kattugal.

Sl. No.	Udal kattugal	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Saaram	20	20	100%	100%
2.	Senneer	3	4	15%	20%
3.	Oon	-	-	-	-
4.	Kozhuppu	2	6	10%	30%
5.	Enbu	1	7	5%	35%
6.	Moolai	-	-	-	-
7.	Sukkilam/suronitham	-	-	-	-

The table showed that Saaram was affected in all the patients in this disease.

## 23. ENVAGAI THERVUAL

Table 23 illustrates the distribution of envagai thervugal.

Sl. No.	Envagai thervugal	No. of cases		Percentage (%)	
		OP	IP	OP	IP
1.	Naadi (Thontha Naadi)				
	1. Vadha pitham	1	4	5%	20%
	2. Vadha kabam	2	1	10%	5%
	3. Pitha vadham	-	-	-	-



	4. Pitha kabam	3	1	15%	5%
	5. Kaba vadham	1	2	5%	10%
	6. Kaba pitham	13	12	65%	60%
2.	Sparisam	-	-	-	-
3.	Naa	1	2	5%	10%
4.	Niram	5	4	25%	20%
5.	Mozhi	20	20	100%	100%
6.	Vizhi	-	-	-	-
7.	Malam	4	3	20%	15%
8.	Moothiram	-	-	-	-

In Naadi Kaba pitham showed higher frequency than the others.

The table showed Mozhi & Niram were affected in most of the patients.

#### 24. NEER KURI

Niram, Manam, Edai, Nurai and Enjal were not affected in all OP and Ip-patients.

#### 25. NEI KURI

Table 25 illustrates the distribution of Nei kuri.

Sl. No.	Nei Kuri	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Vatha Neer	1	4	5%	20%
2.	Pitha Neer	3	-	15%	-
3.	Kaba Neer	16	14	80%	70%
4.	Thontha Neer	-	2	-	10%

The table showed that Kaba Neer was found in most of the cases.

## 26. Laboratory Analysis

Table 26 illustrates the distribution of Laboratory Analysis

Sputum for AFB and Mantoux test were found to be negative in all the 100% of In-patients and Out-patients.

The In-patients were made to follow up the medicine and treated in Op for 10 days after their discharge.

## 27. PULMONERY FUNCTION TEST

S.No	Patients Name	PFT
1.	Mr. Ramadoss 57/ M Ht : 165 cm Wt : 55 kg.	<ul style="list-style-type: none"><li>• Early small airway obstruction as FEF 25-75 % pred or PEFR % pred &lt;70</li><li>• Severe restriction as [FEV<sub>1</sub>/FVC]% pred &gt;99 and FVC% pred &lt; 80</li></ul>
2.	Mrs. Muthulakshmi 51/ F Ht : 172 cm Wt : 50 kg.	<ul style="list-style-type: none"><li>• Early small airway obstruction as FEF 25-75% pred or PEFR % pred &lt;70</li><li>• Severe restriction as [FEV<sub>1</sub>/FVC]% pred &gt;99 and FVC% pred &lt;44</li></ul>
3.	Mrs. Gandhimathi 60/ F Ht : 172 cm Wt :60 kg.	<ul style="list-style-type: none"><li>• Early small airway obstruction as FEF 25-75%, pred or PEFR % pred &lt;70</li><li>• Severe restriction as (FEV<sub>1</sub>/FVC) %Pred &gt;99 and FVC% pred &lt;44</li></ul>

## 28. PULMONARY FUNCTION TEST REPORT, BEFORE TREATMENT, AFTER TREATMENT

Table 28 illustrates the Pulmonary Function Test Report, Before Treatment, After Treatment.

S.No	Patient History	Parameter	Predicted	BT	AT
1.	Mr. Prabakar 26/ M Ht : 173cm Wt : 62 kg	FVC(L) FEV <sub>1</sub> (L) FEV <sub>1</sub> /FVC(%) PEFR (L/S) FEF 25-75 L/S	3.80 3.24 85.26 9.55 4.63	57% 67% 117% 63% 30%	86% 101% 96% 77% 18%
2.	Mr. Chellaiah 60/ M Ht : 170cm	FVC(L) FEV <sub>1</sub> (L) FEV <sub>1</sub> /FVC(%)	3.17 2.41 76.03	20% 26% 129%	20% 20% 98%

	Wt : 72 kg	PEFR (L/S) FEF 25-75 L/S	8.15 3.04	21% 20%	11% 14%
3.	Mrs. Annammal 54/ F Ht : 155 cm Wt : 53 kg	FVC (L) FEV <sub>1</sub> (L) FEV <sub>1</sub> /FVC(%) PEFR (L/S) FEF 25-75 L/S	2.18 1.65 75.69 5.50 2.54	28% 12% 43% 9% 9%	25% 27% 107% 13% 16%

## 29. PULMONARY FUNCTION TEST REPORT AFTER TREATMENT

S.No	Patient History	PFT
1.	Mr. Chelladurai 59/ M Ht: 152 cm Wt : 79 kg	<ul style="list-style-type: none"> <li>• Early small airway obstruction as FEF 25-75 % pred or PEFR % pred &lt;70</li> <li>• Spirometry within normal limits as (FEV<sub>1</sub>/FVC) %Pred &gt;99 and FVC %Pred &gt;80.</li> </ul>

## 30. RESPIRATORY RATE

S.No	IP. No	Respiratory Rate		OP.No	Respiratory Rate	
		BT	AT		BT	AT
1.	1916	25	20	43406	23	20
2.	1962	23	21	44399	25	21
3.	2295	24	21	46389	23	20
4.	2331	23	19	46406	24	19
5.	2416	22	19	48463	22	20
6.	2421	22	19	48876	25	21
7.	2627	22	19	49461	23	19
8.	2741	24	20	50506	23	20
9.	2790	23	19	50754	24	21
10.	2851	25	20	51847	23	20
11.	2909	23	20	51928	22	19
12.	2913	24	21	52317	23	20

13.	2967	23	19	55702	25	19
14.	3062	25	20	55932	23	20
15.	3030	24	19	57229	22	19
16.	3323	23	21	58696	25	20
17.	3328	24	20	60216	23	19
18.	3386	23	20	63619	22	19
19.	3451	24	19	65948	25	20
20.	3745	25	19	65999	23	19

From the table it is observed that the trial drugs increased the oxygenation of the blood thereby reduced the respiratory rate to the normal level.

### 31. GRADATION OF RESULTS

Table 31 illustrates the Gradation of results

Sl. No.	Gradation of Results	No. of cases		Percentage%	
		OP	IP	OP	IP
1.	Good	16	15	80%	75%
2.	Moderate	3	3	15%	15%
3.	Poor	1	2	5%	10%

#### In Op study

80% of cases showed Good response. 15% of cases showed Moderate response and 5% of cases showed Poor response.

#### In Ip study

75% of cases showed Good response. 15% of cases showed Moderate response and 10% of cases showed Poor response.

## **DISCUSSION**

The present global respiratory disease is Manthara kaasam (Bronchial asthma) which affects millions of people in the world which occurs due to pollution of environment and changes in life style.

The efficacy of Siddha system in controlling this respiratory disease prompted me to carry out clinical and scientific study in this subject.

For the clinical study 20 selected patients were admitted as In-patients in post Graduate Department of Pothu Maruthvam and were treated with the trial medicine. After discharge all the twenty patients were followed as the out-patients.

The medicine was also trialed with 20 out patients in the out-patients Department of Pothu Maruthuvam.

The results were clearly observed and recorded under the supervision of Professor, Reader and Assistant lecturer. The observed results were discussed here.

### **1. Sex Distribution**

Among the both In-patients and Out-patients 70% each of the males and females 30% were affected.

This indicated that males were mostly affected by the disease than females and this may be due to increased exposure of males to smoking.

## **2. Age Distribution:**

Among the In-patients 70% of the patients were affected in the age groups of 51-60 years, 5% of the patients were affected in the age group of 61-70 years, 25% of the patients were affected in the age group of 61-70 years.

Among the Out-patients 65% of the patients were affected in the age group of 51-60 years, 10% of the patients were affected in the age group of 13-20 years and 61-70 years, 5% of the patients were affected in the age group 21-30 years, 31-40 years and 41-50 years.

It showed that increased incidence of the patients the age group of 51-60 years.

It indicated that the increased incidence of the disease during the old age was due to decreasing lung capacity, lung function and immunity.

## **3. Kaalam (age)**

Among In-patients 100% belonged to pithakaalam (33-66 years).

Among the Out-patients 85% belonged to pithakaalam (33-66 years) and 15% belonged to vathakaalam (1-33 years).

The maximum no of cases were treated in the pithakaalam.

## **4. Constitution of Body :**

Among In-patients 70% were kaba thegi.

20% were vatha thegi.

10% were thontha thegi.

Among Out-patients 60% were kaba thegi

30% were vatha thegi.

10% were vatha thegi.

10% were belonged to pitha thegi.

The maximum no of cases were treated in the kaba thegi.

## 5. Religion :

Among In-patients 85% were Hindus.

10% were Christians.

5% were Muslims.

Among Out-patients 85% were Hindus.

10% were Christians.

5% were Muslims.

## 6. Gunam :

Among In & Out patients 100% had Rajogunam.

## 7. Thina:

Among In-patients 40% belonged to Mullai (ie. Forest and its surroundings) , 40% belonged to Neithal (ie. Sea and its surroundings) and 20% belonged to Kurunji (ie. Hill and its surroundings).

Among Out-patients 40% belonged to Kurunji (ie. Hill and its surroundings) , 35% belonged to Mullai (ie. Forest and its surroundings) and 25% belonged to Neithal (ie. Sea and its surroundings)

According to the literature Marutha Nilam is free from disease.

According to Noi illa Neri text,

“மருதநில நன்னீர் வளமொன்றைக் கொண்டே

பொருதநில மாதிய நோய் போக்கும்”

“நீரின் குணமெல்லாம் மண்ணின் குணமல்லால்

மற்று முண்டே”

- நோயில்லா நெறி (பக்கம் 3)

## **8. Paruvakaalam :**

Among In-patients 60% were affected during Kaarkaalam.

25% were affected during Koothir kaalam.

15% were affected during Muthuvenil kaalam.

Among Out-patients 70% were affected during Kaarkaalam.

30% were affected during Muthuvenil kaalam.

This shows that most of the patients gets affected in Kaarkaalam.

## **9. Occupational Distribution:**

Among the In-patients 55% belongs to agricultural labours, 15% were house wife, 10% were cement factory workers, 5% were beedi makers, 5% were policemen, 5% were grocery store workers, 5% were mechanical engineer.

Among the Out-patients 25% were agricultural labours, 15% were housewife, 15% were grocery stores workers, 10% were students, 10% were manson, 10% were cement factory workers, 5% were beedi maker, 5% were chemical workers and 5% were policemen.

This shows Manthara kaasam occurs predominantly in people exposed to dust or husks of grain in case of agri labours.

## **10. Aetiological factor of the patients:**

Among the In-patients 60% of the patients had smoking, 30% of the patients had dust & cold exposure 10% of the patients had husk of grains & air pollution collectively as their aetiological factor.



Among the Out-patients 55% of the patients had smoking, 35% of the patients had husk of grains & air pollution, 10% of the patients had smoking collectively as their aetiological factor.

Above data illustrated smoking, dust & cold exposure and husk of grains & air pollution were the aetiological factors among the patients.

According to literature, the aetiological factor are excessive inhalation of smoke, cold climate, noisy wind, husk of grains, inhalation of irritant fragrance.

Thus the above data coincided with the literature.

#### **11. Distribution of Socio-Economic status:**

Among the In-patients 80% belonged to the low class Socio-Economic status.

20% belonged to middle class.

Among the Out-patients 55% belonged to the low class Socio-Economic status and 45% belonged to middle class.

This Observation indicated the increased incidence of the disease in low class Socio-economic status.

#### **12. Food Habits:**

Among the In patients, 85% of them had mixed diet and 15% of them had vegetarian diet.

Among the Out patients, 80% of them had mixed diet and 20% of them had vegetarian diet.

The observations illustrates that the disease was predominant in the mixed diet habitats.

According Yugi Vaidhya Chinthamani, the dietary factors that cause the disease are taking non-vegetarian diet and taking improperly cooked food.

### **13. Family History:**

Among the In patients, 95% of the patients had negative family history and 5% of the patients had positive family history.

Among the out patients 90% of the patients had negative family history and 10% of the patients had positive family history.

It is showed that most of the patients had negative family history.

### **14. Habits:**

Among the In patients 65% of the patients were smokers, 10% of the patients were betel nut chewers, 5% of the patients were tobacco chewers, 5% of the patients were alcoholic and 15% of the patients had no such habits.

Among the out patients 50% were smokers, 10% of the patients were tobacco chewer and alcoholic and 30% of the patients had no such habits.

This disease was predominant in smokers.

### **15. Clinical manifestations**

The data from the observation showed that 100% of incidence of difficulty in breathing in both In-Patients and out-patients.

Among In-patients and Out-patients cough without expectoration was seen in 100% .

Tightness of chest was present in 30% of In-patients and 20% of Out-patients, Eosinophil count is raised in 30% of In-patients and 45% of Out-patients, running nose was present in 30% of the In-patients and 20% of the out-

patients, sneeze was present in 20% of the In-patients and 25% of the Out-patients, sweating was present in 10% of Op-patients and expectoration was present in 10% of Ip-patients and 20% of Op-Patients.

#### **16. Involvement of other systems:**

Both In-patients, Out-Patients Gastro intestinal system and musculo skeletal were affected more than any other system with the disease.

#### **17. Mode of onset**

The observation illustrated the mode of onset in all the 100% of the In-Patients were chronic.

In Out- patients the mode of onset is chronic in 80% of patients and acute in 4% of the patients.

#### **18. Duration of disease**

Among the In-patients, 60% incidence for the duration of upto 6 months 35% incidence for the duration of 6months – 2 years and 5% incidence for the duration of 6-10 years.

Among the Out-patients, 65% incidence for the duration of upto 6months, 10% incidence for the duration of 6 months - 2 years, 15% incidence for the duration of 2-6 years. 5% incidence for the duration of 6-10 years, and 5% incidence for the duration of 15-25 years.

The data illustrated the highest incidence of duration of disease among the In-patients and Out-patients were upto 6months .

#### **19. Imporigal (Gnaendhriyam):**

Among the In-patients Mookku was affected in 35% of the patients.

Among the Out-patients, Mookku (Nose) was affected in 50% of the patients .i.e. anosmia due to running nose. Vai was affected in 5% of the patients due to altered in taste.

## **20. Kanmenthiriyam**

It was illustrated that among the In-patients, Kai was affected in 5% of the patients, kaal was affected in 15% of the Patients. They had Knee joint pain may be due to aging. Eruvai was affected in 35% of the patients. They had constipation. Kariuvai were not affected.

Among the Out-patients, Kaal was affected in 15% of the patients & eruvai was affected in 5% of the patients vai was affected 40% of due to altered in taste. Kai and Karuvai were not affected.

## **21. Mukkutram**

### ***a. Vatham***

Pranan was affected in all the 100% of the In-patients and Out-patients. Uthanan was affected in 80% of the In-patients and 75% of the Out-patients. Viyaanan was affected in 40% of the In-patients and 15% of the Out-patients. Samanan was affected in 70% of the In-patients and 60% of the Out-patients. Abanan was affected in 35% of the In-patients and 40% of the Out-patients. Kirukaran was affected in 55% of the In-patients and 70% of the Out-patients. Devaththan was affected in 60% of the In-patients and 55% of the Out-patients.

Pranan is responsible for respiration in mantharakaasam, this vayu was affected leading to difficulty in breathing, cough is also caused by pranan.

### ***b. Pitham***

Anar pitham was affected in 70% of the In-patients and 60% of the Out-patients.

Anarpitham is responsible for appetite. Since there was loss of appetite in the clinical trial the anarpitham was affected.

Ranjagam, Sathgam, Prasagam, Aalosagam were not affected in this disease.

### ***c. Kabam***

Avalambagam was affected in all the 100% of both In-patients and Out-patients kiletham was affected in 35% of the In-patients and 40% of the Out-patients santhigam was affected in 55% of the In-patients and 15% of the Out-patients.

Avalambagam is residing in lungs and helps other four types of kaba to function. It was deranged due to the presence of breathlessness and cough without expectoration.

Kiletham is present in the stomach and gives moisture to the food materials and also helps in digestion. It was deranged due to loss of appetite.

Santhigam resides in the joints and helps for movement. Since there was joint pain, it was affected. It may be due to their aging.

Pothagam is living in the tongue and responsible for taste sensation. It was deranged in some patients.

## **22. Ezhu udal Kattugal**

In ezhu udal Kattugal, Saaram was affected in all the 100% of the In-patients and Out-patients. Enbu was affected in 35% of the In-patients and 5% of the Out-patients. Kozhuppu was affected in 30% of the In-patients and 10% of the out patients, senner was affected in 20% of the In-patients and 15% of the out-patients.

Saaram strengthens the body and mind, since, there is loss of appetite and strengthless causing body tiredness due to breathlessness and cough with expectoration.

Enbu and Kozhuppu are responsible for the movements of the body and gives lubrication to the joint cavities, since, there was joint pain, these two were affected may be due to aging.

## **23. Envagai Theruvugal**

Mozhi was affected in all the 100% of both In-patients and Out-patients due to low pitched voice and difficulty in speech. Naa was affected in 10% of the In-patients and 5% of the Out-patients due to coated tongue, pallor tongue.

Maalam was affected in 15% of the In-patients and 20% of the Out-patients due to constipation. Niram was affected in 20% of the In-patients and 25% of the Out-patients due to pallor.

Sparisam, Vizhi and moothiram were not affected in this disease.

In Naadi 20% of the In-patients and 5% of the Out-patients had vatha pitham naadi. 5% of the In-patients and 10% of the Out-patients had Vatha kaba naadi. 5% of the In-patients and 15% of the Out-patients had pitha kaba naadi.

10% of the In-patients and 5% of the Out-patients had kaba Vatha naadi. 60% of the In-patients and 65% of the Out-patients had Kaba pitha naadi.

#### **24. Neerkuri**

Niram, Manam, Edai, Nurai and Enjal were not affected in all patients

#### **25. Neikuri**

In Neikuri ,100% of the In-patients and Out-patients had Kaba neer.

#### **26. Laboratory analysis**

Routine investigation of blood and urine were done during the admission and at the end of the treatment for every case.

Blood urea and serum cholesterol were found to be in normal range before and after treatment.

X-ray chest PA view – normal.

Pulmonary function test are done for 4 patients from In-patients and 3 patients from Out-patients. The results showed obstructive airway disease.

Blood investigation of In-patients showed total count of WBC in normal range. Eosinophils count was increased and ranged from 4-15 cells before treatment and after treatment it ranged 1% to 5%. ESR (Erythrocyte Sedimentation Rate) was raised in before treatment and the after treatment was reduced. Hemoglobin content was decreased in before treatment and the after treatment was normal.

Blood investigation of Out-patients showed TC within the normal range. Eosinophils count was raised and showed the range of 3% to 8% cells before treatment, and after treatment it ranged 1% to 3%.

Haemoglobin content was increased slightly before treatment and the after treatment.

Sputum examination was found to be negative for all the 100% of both the In-patients and Out-patients .

Mantoux test was found to be negative for all 100% of both the In-patients and Out-patients.

According to modern medicine, the aetiological factors for the disease are smoking, dust and cold exposure, husk of grains & air pollution, stress and food habits.

Bio chemical analysis showed the presence of starch, ferrous iron, phosphate and unsaturated compound. The trial medicine **Thakkolathi chooranam** had significant antispasmodic, acute anti-inflammatory and anti-histamine activities.

Anti microbial study showed the trial drug medicine is highly sensitized to E.Coli.

Symptoms of the disease bronchial asthma are closely matched with Manthara kaasam as explained in Yugi vaithya chinthamani-800.

### **Treatment**

Thakkolathi chooranam 3gm thrice daily with hot water after meals was prescribed and was given till the end of their treatment.

### **Gradation of results**

Good results were found in 75% of both In-patients and 80% Out-patients. Fair results were found in 15% of In-patients and 15% of Out-patients. Poor results were found in 10% of In-patients and 5% of Out-patients.



## SUMMARY

Manthara kasam is the common respiratory disease seen in day to day clinical practice.

In this clinical study 20 patients of both sexes of varying age groups were selected as In-patients 20 patients as out-patients.

The entire course of treatment regime as follows.

**Thakkolathi chooranam** – 3 gm thrice a day after meals with hot water.

- ❖ Manthara kasam is an episodic disease which prolongs for year and occurs episodically. So Thakkolathi chooranam is orally administered for a course of treatment.
- ❖ The drug has significant antihistamine property. This help to get rid of the symptoms like cough, running nose, sneezing, which in turn relieve the broncho spasm, tightness of the chest.
- ❖ The results of this clinical trial were found to be very encouraging in almost every cases. There was marked improvement within few days of treatment. All the In-patients and Out-patiets were instructed to follow up the treatment.
- ❖ No recurrence of the disease was seen the treatment schedule . There were no clinical side effects, toxic effects during the coarse of treatment.
- ❖ The trial drugs were found to play the major role to correct the deranged three humours, thereby correcting Pranan, Abanan, Udhanan, Kirugaran,

Devathathan Vayus, Pitham such as Anal Pitham and the vitiated kabam is restored to the normal.

- ❖ All the patients were advised to follow strict diet restrictions and advised to practice Pranayamam and Yoga therapy.
- ❖ Clinically 82.5% of the patients showed good results.
- ❖ Pharmacological analysis showed that the trial drugs.

**Thakkolathi chooranam** has **significant Antispasmodic action, Antihistaminic effect and Anti-inflammatory effect.**

- ❖ Anti microbial study showed the trial drugs **Thakkolathi chooranam** are sensitive to E.coli.

## CONCLUSION

- 77.5% of the patients good results 15% showed moderate results and 7.5% showed poor results.
- The identification of suvaigal are on the basis of the individual ingredients of these preparations.

These drugs which are under the trials as got the thanmai veppam.

Thakkolathi chooranam has got the Karppu pirivu according to the basic principles of Siddha Medicines.

In this trial drug has got Inippu, Karppu Suvaigal.

The Karppu suvai which has potent to act as antagonist the excessive kabam.

“ஐய விகாரம் அழித்திடும்

*-சித்த மருத்துவாங்க சுருக்கம்*

All these drugs has got the Thanmai Veppam. The veppam has got to action to decrease the vitiated kabam.

After ingestion while the trial medicine reaches the gastric juice, it will change into the vibagam Karppu. At this stage also, the medicine will acts as anti Kaba Medicine due to the Vibagam Karppu.

“சேதமுறச் செய்யுஞ் சிறையம் - ஒதக்கேள்

காரந் துவர் கசப்புக் காட்டுஞ் சுவை யெல்லாம்

சாரப் பரிகாரஞ் சாற்று”.

*-நோய் நாடல் நோய் முதல் நாடல்*

கார்ப்பு, கைப்பு சுவைகள் ஐய மிகுதியை சமன்செய்யும்.

Thakkolathi Chooranam has got significant efficacy to treat Manthara kaasam on the basis of their anti- kaba principle.

Further follow up these patients showed sense of well being and reduce these signs and symptoms.

**So, Manthara kaasam is controllable with Thakkolathi Chooranam.**

## ANNEXURE – I

### PREPARATION OF THE TRIAL MEDICINE

#### தக்கோலாதிச் சூரணம்

“தக்கோலந் தான்கழஞ்சு கிராம்பு மொருகழஞ்சு

தன்னேல மொருகழஞ்சு திப்பிலி யிருகழஞ்சு

நற்கான சிறுதேக்கு நாற்கழஞ்சு சுக்கு

நலமான எண்கழஞ்சு மிளகுபத்துக் கழஞ்சாய்

முற்கானச் சூரணமாய்ச் சர்க்கரையும் கூட்டி

பாக்களவு முதிராதஇளவெந்நீர் முயன்றேகொள்ள

சிறகாது அரோசிகமும் வாயுச் சேற்றும்

மிரைப்புசத்தி வாதபித்த மறுமே.”

- (அகத்தியர் இரண்டாயிரம் - மூன்றாம் பாகம்)

பக்கம் - 105.

செய்முறை:

இவைகளைக் கல்லுரலிலிட்டிடித்து வஸ்திரகாயஞ் செய்து சரியளவு  
சர்க்கரை சேர்த்து ஒரு பாணையில் பத்திரப்படுத்தி ஒரு பாக்களவு  
வெதுவெதுப்பான வெந்நீருடன் உட்கொள்ளவும்.

அளவு : 3 கிராம், தினமும் 3 வேளை உணவிற்குப் பின்  
20 நாட்கள்

அனுபானம் : வெந்நீர்.

தீரும் நோய்கள்: அரோசகம், வாயு, கபம், இரைப்பு, வாந்தி, பித்தம்  
முதலானவை தீரும்.

**அன்னாசிப்பு – *Illicium verum* Hook.f**

**Synonym** : Star Anise, Anasphal

**Botanical name** : *Illicium verum*

**Common name** : Star Anise

**Family** : Illiciaceae

**Parts used** : Fruit

**Siddha properties** :

**Siddha name** : Annasippu

**Suvai** : Inippu, viruviruppu

**Thanmai** : Veppam (Hot)

**Vipakam** : Kaarppu (Pungent)

**Pharmacological actions** : Stimulant, stomachic, **expectorant**, carminative.

**Phytochemical constituents:** Fruit contains essential oil which has limonene, linalool, eugenol, estragole, methyl eugenol, *p*- Anisaldehyde, etc.,

“அன்னாசிப் பூவை யருந்தக் கறியிலிட்டு

என்னாகுந் மன்பதைக்கிங் கேந்திழையே - இன்னுசெய்

வாதமறும் பித்தமறும் மாறாய் பிடிப்பகலு

தீதறவே தீபனமாந் தேர்.”

- (பதார்த்த குண விளக்கம்)

அன்னாசிப்பூவைக் கறிகளிலே கூட்டிச் சமைத்துண்ண வாதரோகங்களையும்,  
மேகவாயு பிடிப்புகளையும் குணப்படுத்தும். பசியை அதிகரிக்கச் செய்யும்.

**கிராம்பு – *Syzygium aromaticum* (Linn) Merrill & Perry**

<b>Botanical name</b>	: <i>Syzygium aromaticum</i>
<b>Common name</b>	: Clove
<b>Family</b>	: Myrtaceae
<b>Parts used</b>	: Flower, bud, leaf.
<b>Siddha properties</b>	:
<b>Siddha name</b>	: Elavangam, kirambu, anjugam, urkadam, sosam, thirali.
<b>Suvai</b>	: Kaarppu, viruviruppu
<b>Thanmai</b>	: Veppam (Hot)
<b>Vipakam</b>	: Kaarppu

**Pharmacological actions** : Rubefacient, antispasmodic, carminative, stomachic, aromatic.

**Phytochemical constituents:** Buds contain ellagitannin-eugeniin, caryophyllene, eugenol and nepthlane. Volatile oil consists of hydroxy-4, 6-dimethoxy-5-methylacetophenone, benzyl salicylate, methyl palmitate,  $\gamma$ -muurolene,  $\beta$ -selinene and  $\alpha$ -thajene.



“பித்த மயக்கம் பேதியொடு வாந்தியும்போம்

சுத்தவிரத் தக்கடுப்புந் தோன்றுமோ – மெத்த

இலவங்கங் கொண்டவருக் கேற் சுகமாகும்

மலமங்கே கட்டுமென வாழ்த்து.”

- (அகத்தியர் குணவாகடம்).

இலவங்கப்பூவுக்குப் பித்தகோபம், அதிசாரம், சர்த்தி, உதிரக்கிராணி, ஆசனப்பிடுங்கல், ஷீணவிந்து, செவிநோய், விவுர்த்தம், சம்விவுர்தம் ஆகிய வாதங்கள், கண்களில் பூ படர்தல் மலக்கட்டு முதலிய நோய்களை நீக்கும்.

**ஏலம் - *Elettaria cardamomum* (L) Maton**

**Synonym** : A momum repens Sonnt

A.cardamomum White non L

Alpine cardamomum Roxb

**Botanical name** : *Elettaria cardamomum*

**Common name** : Cardamom

**Family** : Zingiberaceae

**Parts used** : Seed

**Siddha properties** :

**Siddha name** : Yaelakkai, aanji, dhudi, korangam

**Suvai** : Kaarppu (Pungent)

**Thanmai** : Veppam (Hot)

**Vipakam** : Kaarppu (Pungent)

**Phytochemical constituents:** Seeds contain essential oil which constitute eucalyptol, sabinene, d- terpineol and acetate, borneol, limonene, terpinene etc. It also contains crude protein, starch, minerals, Vit A, B and C.

**Pharmacological activities** : Hepatoprotective, **anti-inflammatory**, analgesic, **antispasmodic**, **antimicrobial**, antifungal.

“தொண்டை வாய்கவுள் தாலுகு தங்களில்

தோன்றும் நோயகி சாரம்பன் மேகத்தால்

உண்டை போல்எழுங் கட்டி கிரிச்சரம்

உழலை வாந்தி சிலந்தி விஷஞ்சுரம்

பண்டை வெக்கை விதாகநோய் **காசமும்**

பாழுஞ் சோமப் பிணிவிந்து நட்டமும்

அண்டை யீளைவன் பித்தம் இவைக்கெல்லாம்

ஆல மாங்கமழ் ஏல மருந்ததே....”

- (அகத்தியர் குணவாகடம்)

இருமல், கழிச்சல், நீர்ச்சருக்கு, நெஞ்சின் கோழைக்கட்டு, சிலந்தி நஞ்சு  
இவைற்றையும் போக்கும்; அழலை ஆற்றும்; வெண்ணீரைப் பெருக்கும்.

**திப்பிலி – *Piper longum* Linn**

**Botanical name** : *Piper longum*

**Common name** : Long pepper

**Family** : Piperaceae

**Parts used** : Root, fruit.

**Siddha properties** :

**Siddha name** : Thippili

**Suvai** : Inippu

**Thanmai** : Veppam (Hot)

**Vipakam** : Inippu

**Phytochemical constituents:** Fruit yield essential oil which consists of monocyclic sesquiterpenes, piperidine alkaloids piperonaline, piperundecalidine, isobutyl amide longamide, guiniensine, lignans pluviatilol, methyl pluviatilol (fargesil), sesamine, asarinine and pipataline.

**Pharmacological activities:** Antispasmodic, analgesic, carminative, sedative, emmenagogue, abortifacient, haematinic, diuretic, aphrodisiac and stomachic.

“இருமல் குன்மம் இரைப்பு கயப்பிணி

ஈளை பாண்டு சந்யாசம் அரோசகம்

பொருமல் ஊதை சிரப்பிணி மூர்ச்சைநோய்

பூரிக் குஞ்சல தோடம் பீலிகமும்

வரும லப்பெருக் கோடு மகோதரம்

வாதம் ஆதிமுத் தோடஞ் சுரங்குளிர்

பெருமாலைப்புரி மேகப் பிடகமும்

பேருந் திப்பிலிப் பேரங்குரைக்கவே.”

- (தேரன் குணவாகடம்).

“ஈளை யிருமலிரைப்புப் பசப்பிணிகள்

மாள மொழியாமல் வாட்டுமே - யாளுமுறை

பாங்கா யறிந்து செய்வீர் பண்டிதத்தைப் பண்டிதரே

வேங்கைவாயப்ப் பான்கணை மெய்.”

- (தேரன்வெண்பா)

இருமல், குன்மம், இரைப்பு, கபநோய், ஈளை, பாண்டு, சந்நியாசம், அரோசகம், பொருமல், தலைநோய், மூர்ச்சை நோய், சலதோஷம், பீலிகம், மலப்பெருக்கு, மகோதரம், வாதம், முத்தோடம், சுரம், குளிர், மேகப்பிடகம், ஆசனநோய், தொண்டைநோய், ஆவரண பித்தம், நாசிநோய், விழிநோய், காது நோய், புழுநோய் போம், தாதுவிர்த்தியுண்டாகும்.

**சிறுதேக்கு – *Clerodendrum serratum* (L) Moon**

<b>Synonym</b>	: Beetle killer
<b>Botanical name</b>	: <i>Clerodendrum serratum</i>
<b>Common name</b>	: Bhargi
<b>Family</b>	: Verbenaceae
<b>Parts used</b>	: Leaf, root.
<b>Siddha properties</b>	:
<b>Siddha name</b>	: Kandupaarangi, angaravalli
<b>Suvai</b>	: Kaippu, thuvorppu
<b>Thanmai</b>	: Veppam (Hot)
<b>Vipakam</b>	: Kaarppu (pungent)
<b>Pharmacological actions</b>	: Stimulant, sedative, febrifuge.

**Phytochemical constituents:** The leaves contain alkaloid and bitter substance. The root contains sapogenin and triterpene, starch and resin. Root bark contains glucose and D- (-)mannitol; hydrolysis of crude saponin from bark yielded oleanolic acid, queretaroic acid and serratagenic acid.

“கண்டுபா ரங்கியெனுஞ் சிறுதேக்குண்டேல்

கால்எங்கே பித்தம்எங்கே கபந்தான்எங்கே

தொண்டுதொட்டுத் தொடர்கவாச காசம்எங்கே

சுரம்எங்கே வெறியெங்கே தொனிநோ யெங்கே

மிண்டுபுரி பீசநீர்க் கோவை யெங்கே

வெளிநீருண் ணீரெங்கே வுரற்கா லெங்கே

அண்டுபடாச் சீதசுரங் கடுப்பு மெங்கே

யழலையக நோயெங்கே யறைகுவீரே.”

- (பதார்த்த குண சிந்தாமணி)

வாயு, பித்தம், **கபம்**, சுரம், வெறி, தொண்டை நோய், பீநிசம், நீர்க்கோவை,  
வெளிநீர், உள்நீர், சீதசுரம், கடுப்பு, அழலை, அகநோய்கள் நீங்கும்.

**சுக்கு - *Zingiber officinale* Rose**

**Synonym** : Shunti, Nagara, Mahaushadha, Vishwabheshaja, Shringabera, Katubhadra, Ardrika, Ardraka

**Botanical name** : *Zingiber officinale*

**Common name** : Ginger

**Family** : Zingiberaceae

**Parts used** : Fresh rhizome and dried rhizome.

**Siddha properties** :

**Siddha name** : Inji, allam, aarthram, narumaruppumathil, ilakottai, chukku, sundi, sigaram, sangai, vaer kombu, vidamoodia amirtham.

**Suvai** : Kaarppu (pungent)

**Thanmai** : Veppam (Hot)

**Vipakam** : Kaarppu (pungent)

**Pharmacological activities:** Anti-inflammatory, antiemetic, antiulcer, antiplatelet, antipyretic, cardiovascular, antioxidant, antibacterial, antifungal, antitumoural, antirhinoviral, hepatoprotective, , inhibition of prostaglandin release.

**Phytochemical constituents:** Rhizome contain diarylheptanoids, essential oil, ginger diol and related compounds. Predominant sesquiterpene is zingiberene; others present are : cis-sesquisabinene hydrate, zingiberneol, ar-curcumine,  $\beta$ -bisabolene,  $\alpha$ -selinene,  $\beta$ -elemente.



“சூலை மந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை

மூலம் இரைப்பிருமல் முக்குநீர் - வாலக

தோடமதி சாரந் தொடர்வாக குன்மநீர்த்

தோடம்ஆ மம்போக்குஞ் சுக்கு.”

- (பதார்த்த குண சிந்தாமணி)

“வாதப் பிணிவயி றூதற் செவிவாய்

வலிதலை வலிகுலை வலியிரு விழிநீர்

சீதத் தொடுவரு பேதிப் பலரோ

சிகமலி முகமக முகஇடி கபமார்

**சீதச் சுரம்விரி பேதச் சுரநோய்**

தெறிபடும் எனமொழி குவர்புவி தனிலே

ஈதுக் குதவுமி தீதுக் குதவா

தெனும்விதி யிலைநவ சுறுகுண முனவே.”

- (பதார்த்த குண சிந்தாமணி)

சூலை, மந்தம், நெஞ்செரிப்பு, தோஷம், ஏப்பம், அழலை, மூலம், இரைப்பு, இருமல், முக்குநீர் பாய்ச்சல், கபதோஷம், அதிசாரம், வாதகுன்மம், நீர்த்தோஷம், ஆமைக்கட்டி, வாதநோய், வயிறூதல், செவிநோய், வாய்நோய், தலைநோய், சூலைநோய், இருவிழிநீர், சீதபேதி, பலரோகம், அலிமுகப்பாண்டு, வயிற்றுக்குள் குத்தல், சீதசுரம், பலபேதச் சுரநோயும் நீங்கும்.

**மிளகு – *Piper nigrum* Linn**

<b>Synonym</b>	: Maricha, Vellaja, Krishna, Dharmapattana
<b>Botanical name</b>	: <i>Piper nigrum</i>
<b>Common name</b>	: Black pepper
<b>Family</b>	: Piperaceae
<b>Parts used</b>	: Fruit, root.
<b>Siddha properties</b>	:
<b>Siddha name</b>	: Milagu, kallinai, kariyam, malayin munivan, marisam, malayali, thirangal, vellai milagu, aagutam.
<b>Suvai</b>	: Kaippu (Bitter)
<b>Thanmai</b>	: Veppam (Hot)
<b>Vipakam</b>	: Kaarppu (pungent)

**Phytochemical constituents:** Fruit contains amide-pipericide, oleoresin, alkaloid piperine, volatile oil.

**Pharmacological activities:** Antioxidant, anticonvulsant, sedative, analgesic, CNS depressant, muscle relaxant, antipyretic, anti inflammatory, antifungal, antimicrobial, antiulcer, antibacterial, cyclooxygenase inhibitory activity.

“சீதசுரம் பாண்டு சிலேத்துமங் கிராணி குன்மம்

வாதம் அருசிபித்தம் மாமூலம் - ஓது சன்னி

யாசமபஸ் மாரம் அடன் மேகம் காசமிவை

நாசங் கறிமிளகினால்.”

- (அகத்தியர் குணவாகடம்)

குளிர்சுரம், பாண்டு, கோழை, கழிச்சல், குன்மம், வாயு, சுவையின்மை, வெறி, மூலம், சன்னியாசம், அபஸ்மாரம், பிரமேகம், இருமல் இவை போம்.

“கோணுகின்ற பக்கவலி குய்யவுரோ கம்வாத

சோணிதங்க முத்திற்குள் தோன்றுநோய் - காணரிய

காதுநோய் மாதர்குன்மங் காமாலை மந்தமென்றீர்

ஏதுநோய் காயிருக்கில் ஈங்கு.”

- (தேரன் குணவாகடம்)

பக்கவாதம், குய்யரோகம், சோணிதவாதம், களநோய், செவிவலி, இரத்தகுன்மம், செரியாமை, காமாலை நீங்கும்.

### மிளகின் பெருமை

“தீயாகி யெங்கும் திரியுமதை யாவத்து

மோயாம லெப்படியு முண்டாக்காற் - பாயாது

போந்திமிர்வா தங்கிரந்தி புண்ணீரும் மண்ணவர்க்கும்

காந்திமெய்வா தச்சலுப்பைக் காய்.”

- (தேரன் வெண்பா)

மிளகு வளி, தீ, கபக்குற்றங்கள் இவை அனைத்தையும் நீக்கும். அன்றியும், திமிர்வாதம், கழலை, வளி, சளி இவைகளையும் அகற்றும்.

## கரும்பு – *Saccharum officinarum* Linn

<b>Botanical name</b>	: <i>Saccharum officinarum</i>
<b>Common name</b>	: Sugarcane
<b>Family</b>	: Poaceae
<b>Parts used</b>	: Stem (Juice from sugarcane and a crystallized sugar obtained from the juice)
<b>Siddha properties</b>	:
<b>Siddha name</b>	: Karumbu, punarpoosam, ikku, vaei
<b>Suvai</b>	: Inippu
<b>Thanmai</b>	: Seetham (Cold)
<b>Vipakam</b>	: Inippu

**Pharmacological actions** : Demulcent, antiseptic, cooling, laxative, diuretic, nutrient, preservative.

**Phytochemical constituents:** Sugarcane contains cellulose, hemicellulose and lignin. Juice contains saccharine matter (cane sugar), water, mucilage, resin, fat, albumin, etc; guanine in small quantities is found in sugarcane; it is a white crystalline powder insoluble in water and very sparingly soluble in ammonia and calcium oxalate.

“அருந்து மருந்திற் கனுபான மாகப்

பொருந்துமடல் வாந்திபித்தம் போக்கும் - அருந்தருசி

நீக்கு மதிகபத்தை நீற்றுமகிழ்ச்சியையுண்

டாக்கு நறுஞ்சருக்க ரை.”

- (அகத்தியர் குணவாகடம்)

சருக்கரையானது மருந்துகளுக்கு அனுபானமாக இருப்பதுந்தவிர,  
வாதவமனத்தையும், பித்ததோஷத்தையும், அரோசகத்தையும் போக்கும்.  
கெட்டிப்பட்ட கபத்தை இளக்கும்.

## ANNEXURE – II

### BIO-CHEMICAL ANALYSIS OF THAKKOLATHI CHOORANAM

#### PREPARATION OF THE EXTRACT

The trial drug Thakkolathi chooranam is directly used as the extract.

#### QUALITATIVE ANALYSIS

S.NO.	EXPERIMENT	OBSERVATION	INFERENCE
1.	<b><u>TEST FOR CALCIUM</u></b>  2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 4% Ammonium oxalate solution.	No white precipitate is formed.	Absence of calcium.
2.	<b><u>TEST FOR SULPHATE:</u></b>  2ml of the extract is added to 5% Barium chloride solution.	No white precipitate is formed	Absence of Sulphate.
3.	<b><u>TEST FOR CHLORIDE</u></b>  The extract is treated with Silver nitrate solution.	No white precipitate is formed.	Absence of chloride.
4.	<b><u>TEST FOR CARBONATE</u></b>  The substance is treated with concentrated Hcl.	No brisk effervescence is formed.	Absence of Carbonate.
5.	<b><u>TEST FOR STARCH</u></b>  The extract is added with weak Iodine solution.	Blue colour is formed.	Indicates the presence of Starch.

6	<b><u>TEST FOR IRON FERRIC</u></b>  The extract is acidified with Glacial acetic acid and Potassium ferro cyanide.	No blue colour is formed.	Absence of ferric Iron
7.	<b><u>TEST OF IRON FERROUS</u></b>  The extract is treated with concentrated Nitric acid and Ammonium thio cynaate solution.	Blood red colour is formed.	Indicates the presence of ferrous Iron.
8.	<b><u>TEST FOR PHOSPHATE</u></b>  The extract is treated with Ammonium molybdate and concentrated Nitric acid.	Yellow precipitate is formed.	Indicates the presence of phosphate.
9.	<b><u>TEST FOR ALBUMIN</u></b>  The extract is treated with Esbach's reagent.	No yellow precipitate is formed.	Absence of albumin.
10.	<b><u>TEST FOR TANNIC ACID</u></b>  The extract is treated with Ferric choloride.	No blue black precipitate is formed	Absence of tannic acid
11.	<b><u>TEST FOR UNSATURATION</u></b>  Potassium permanganate solution is added to the extract.	It gets decolourised.	Indicates the presence of unsaturated compound.
12.	<b><u>TEST FOR THE REDUCING SUGAR</u></b>  5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract	No colour change occurs.	Absence of reducing sugar.

	and again boil it for 2 mts.		
13.	<b><u>TEST FOR AMINO ACID</u></b>  One or two drops of the extract is placed on a filter paper and dried it well. After drying, 1% Ninnydrin is sprayed over the same and dried it well.	No violet colour is formed.	Absence of amino acid.
14.	<b><u>TEST FOR ZINC:</u></b>  The extract is treated with Potassium ferrocyanide.	No white precipitate is formed.	Absence of Zinc.

**Inference :**

The trial drug of **Thakkolathi chooranam** contains starch, ferrous iron, phosphate and unsaturated compound.



## **ANNEXURE - III**

### **PHARMACOLOGICAL ANALYSIS**

#### **1. ANTI - SPASMODIC EFFECT ON THAKKOLATHI CHOORANAM**

##### **AIM**

To study the anti - spasmodic effect on "**Thakkolathi chooranam**".

##### **PREPARATION OF THE TRIAL MEDICINE**

1gm of "**Thakkolathi chooranam**" was taken and mixed with 10ml of water and filtered.

##### **PROCEDURE**

A rabbit weighing about 350 gm was starved for 48 hours and only water was allowed.

It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark. Then, the ileum was removed and placed in a shallow dish containing warm tyrode solution (37°C) and continuously aerated. The contents of the lumen of the ileum were washed and utmost care was taken to avoid any damage. It was cut into segments of 4 cm in a fully relaxed state and sutures were made with needle and tied on either side and the segment was suspended in an isolated organ bath. It was aerated by an oxygen tube immersed in tyrode solution. Drugs were given to study the inhibitory effect of Acetyl Choline.

##### **INFERENCE**

The test drug "**Thakkolathi chooranam**" had **significant anti-spasmodic effect**.

## **2. ANTI - HISTAMINIC EFFECT ON**

### **THAKKOLATHI CHOORANAM**

#### **AIM**

To study the anti - histaminic effect of "**Thakkolathi chooranam**".

#### **PREPARATION OF THE TRIAL MEDICINE**

1gm of "**Thakkolathi chooranam** " was taken and mixed with 10ml of water and filtered.

#### **PROCEDURE**

A guinea pig weighing about 350gm was starved for 48 hours and only water was allowed.

It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark. Then, the ileum was removed and placed in a shallow dish containing warm tyrode solution (37°C) and continuously aerated. The contents of the lumen of the ileum were washed and utmost care was taken to avoid any damage. It was cut into segments of 4 cm in a fully relaxed state and sutures were made with needle and tied on either side and the segment was suspended in an isolated organ bath. It was aerated by an oxygen tube immersed in tyrode solution. Drugs were given to study the inhibitory effect of histamine, induced contractions.

#### **INFERENCE**

The test drug "**Thakkolathi chooranam** " had **significant Anti-histaminic effect.**

### **3. ACUTE ANTI-INFLAMMATORY ACTION OF THAKKOLATHI CHOORANAM**

#### **AIM**

To study the anti-inflammatory effect of “**THAKKOLATHI CHOORANAM**”.

#### **PREPARATION OF TRIAL MEDICINE**

1gm of the Thakkolathi chooranam was taken and dissolved in 100ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

#### **PROCEDURE**

The anti-inflammatory activity of Thakkolathi chooranam was studied in healthy albino rats weighing 100-150gm. Nine rats were collected and divided into three groups each containing three rats.

First group was kept controlled by giving distilled water of 2ml/100gm of body weight. The second group was given Ibuprofen as dose of 20mg/100gm of body weight. The third group received the trial medicine Thakkolathi chooranam of 200mg/100gm of body weight.

Before administration of trial medicine, the hindpaw volume of all rats were measured. This was done by dipping the hindpaw upto tibiotarsal junction, into mercury plethysmography. While dipping the hindpaw, by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.

Soon after the measurement, the medicines were administered orally. Once hour later, a subcutaneous injection of 0.1ml of 1% (W/V) carrageen in water was made into plantar surface of both hind paw of each rat.

Three hours after carrageenin injection, hindpaw volume was measured once again. The difference between the initial and final volume was calculated and compared.

This method is more suitable for suitable the anti-inflammatory activity in acute inflammation. The values are given in the table.

#### **EFFECT OF THAKKOLATHI CHOORANAM**

<b>Group</b>	<b>Dose/100mg Body weight</b>	<b>Initial reading In secs</b>	<b>Final readings</b>	<b>Mean difference</b>	<b>% of inflammation</b>	<b>% of inhibition</b>
Control water	2 ml	0.55	1.4	0.85	100	-
Standard Ibuprofen	20 mg	0.55	0.75	0.20	23.5	76.5
Thakkolathi chooranam	100 mg	0.7	1.0	0.3	35.2	64.8

#### **RESULT**

From the above experiment it was concluded that the “**Thakkolathi chooranam**” has **significant acute anti-inflammatory action**.

## **ANNEXURE – IV**

### **ANTI-MICROBIAL STUDY OF THAKKOLATHI CHOORANAM**

#### **BY KIRBY – BAUER METHOD**

#### **AIM**

To determine the Antimicrobial activity of “Thakkolathi chooranam”

#### **COMPONENTS OF MULLER HINTON AGAR MEDIUM:**

Beef Extract	:	300 gms /lit
Agar	:	17 gms /lit
Starch	:	1.5 gms / lit
Casein Hydroxylate	:	17.5 gms/lit
Distilled water	:	1000 ml.
PH	:	7.6

#### **PROCEDURE**

The method of antimicrobial activity study is ups Diffusion Method.

Antibiotic discs are prepared with known concentration of antibiotic are placed on agar plates that has been inoculated with the known pathogenic Micro organism. The antibiotic diffuses through the agar producing an antibiotic concentration; Gradient antimicrobial susceptibility is proportional to the diameter

of the inhibitory zone around the disc. If the Micro organism which grows upto the edge of the disc are resistant to the antimicrobial agent.

The recommended medium in this method is Muller Hinton Agar, its PH should be between 7.2 - 7.6 and should be poured to uniform thickness of 4mm in the petri plate (25ml)

**Methodology:**

Muller Hinton Agar plates are prepared and Pseudomonas, Vibrio cholera, Escherichia coli, Bacillus, Klebsiella, Streptococcus are inoculated separately.

❖ The prepared discs of Thakkolathi chooranam are placed over the incubated plate using sterile forceps and incubated for 24 hours at 37° celcius. The plates after 24hours incubation are observed for the zone of inhibition.

## **RESULT**

<b>S.No</b>	<b>Test Drug</b>	<b>Organisms (Culture)</b>	<b>Susceptibility</b>	<b>Zone size (mm)</b>
<b>1.</b>	<b>Thakkolathi chooranam</b>	<b>Escherichia coli</b>	<b>Sensitised</b>	<b>16mm</b>
<b>2.</b>		<b>Klebsiella</b>	<b>Resistant</b>	
<b>3.</b>		<b>Proteus</b>	<b>Moderately resistant</b>	<b>15mm</b>
<b>4.</b>		<b>Staphylococcus aureus</b>	<b>Moderately resistant</b>	<b>15mm</b>
<b>5.</b>		<b>Streptococcus pneumoniae</b>	<b>Resistant</b>	<b>15mm</b>
<b>6.</b>		<b>Pseudomonas aeruginosa</b>	<b>Moderately resistant</b>	<b>15mm</b>

## **REPORT**

**Thakkolathi chooranam** is sensitive to **Escherichia coli**, resistant to **Klebsiella** and **Pseudomonas aeruginosa** and moderately resistant to **Proteus**, **Streptococcus pneumoniae** and **Staphylococcus aureus**.

**ANNEXURE- V**

**CASE SHEET PROFORMA**

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

**PALAYAMKOTTAI, TIRUNELVELI DISTRICT**

**DEPARTMENT OF POTHU MARUTHUVAM**

**PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON**

**MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH**

**THAKKOLATHI CHOORANAM**

**FORM-I**

**(SCREENING AND SELECTION PROFORMA)**

**1.Name**\_\_\_\_\_

**2.Age**\_\_\_\_\_

**3.Gender**\_\_\_\_\_

**4. OP No.** \_\_\_\_\_

**5. IP No.** \_\_\_\_\_

**6. S.No.** .\_\_\_\_\_

**INCLUSION CRITERIA:**

❖ Age : 13 – 65 Yrs

❖ Sex : Both male and female

❖ Patients having symptoms of difficulty in breathing, chest tightness, wheeze, cough without expectoration.

❖ Patients who are willing to undergo radiological investigation and give blood for laboratory investigations.



- ❖ Patient willing to sign the informed consent stating that he/she will consciously stick to the treatment during 20 - 30 days but can opt out of the trial of his/her own conscious discretion.

**EXCLUSION CRITERIA:**

- ❖ Evening rise of temperature
- ❖ Sudden onset of severe dyspnoea
- ❖ Patients of sputum positive for AFB
- ❖ Patients with diabetes mellitus, post pulmonary tuberculosis including alveolitis.
- ❖ Patients with cardiac asthma and renal asthma.
- ❖ Paediatric patient less than 13 years
- ❖ Symptoms accompanied by bradycardia, pulsus paradoxus, exhaustion, confusion, reduced conscious level, central cyanosis and silent chest
- ❖ Patient with any other serious illness

Date :

Station :

Signature of Investigator

Signature of HOD

Signature of Reader / Lecturer

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

**PALAYAMKOTTAI, TIRUNELVELI DISTRICT**

**DEPARTMENT OF POTHU MARUTHUVAM**

**PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON  
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH**

**THAKKOLATHI CHOORANAM**

**FORM I A**

**HISTORY PROFORMA ON ENROLLMENT**

1. S.No : \_\_\_\_\_

2. OP/IP No:\_\_\_\_\_

3. Name: \_\_\_\_\_

4. Gender: Male ☐

Female ☐

5. Age (years): \_\_\_\_\_

DOB

Date

Month

Year

6.Address: -----

-----

-----

7.A.Occupation: -----

B. Nature of work -----

8. Educational Status: A) Illiterate

☐

B) Literate

☐

9.Height:----- cms

10.Weight:-----kg

11. Complaints and Duration:

12. History of past illness:

13. Habit of

A) Smoking : 1. Yes  duration \_\_\_\_\_ years; Number - \_\_\_\_\_ 2. No

Past H/O chronic smoking:

B) Alcoholism: 1. Yes  duration \_\_\_\_\_ years; Quantity- \_\_\_\_\_ ml 2. No

C) Tobacco chewing: 1. Yes  duration \_\_\_\_\_ years 2.No

D) Betel chewing : 1. Yes  duration \_\_\_\_\_ years 2.No

14. Diet : A.Pure vegetarian  B.Non-vegetarian

15. Drug history: Had the patient been treated before with allopathy drug?

A) Yes  B) No

16. Marital status : 1.Married  2.Unmarried

17. Family history :

Whether this problem runs in family? 1. Yes  2.No

If yes, mention the relationship of affected person(s) - \_\_\_\_\_

18. Menstrual history:

19. Bowel habits & micturition: Normal  Abnormal

20. Psychological state: Normal  Anxiety  Depression

Date :

Station :

Signature of Investigator

Signature of Reader/Lecturer

Signature of HOD

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**  
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**DEPARTMENT OF POTHU MARUTHUVAM**  
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**THAKKOLATHI CHOORANAM**

**FORM II & II-A**

**CLINICAL ASSESSMENT ON ENROLLMENT AND ON VISITS**

1. S.NO: \_\_\_\_\_ 2. OP/IP NO : \_\_\_\_\_  
3. Name : \_\_\_\_\_ 4. Age : \_\_\_\_\_ 5. Gender : \_\_\_\_\_  
6. Date of assessment : \_\_\_\_\_

**SIDDHA SYSTEM OF EXAMINATION**

**1. ENVAGAI THERVU: [EIGHT-FOLD EXAMINATION]**

**I. NAADI: [PULSE PERCEPTION]**

	0 <sup>st</sup> Day	07 <sup>th</sup> Day	14 <sup>th</sup> Day	21 <sup>st</sup> Day	28 <sup>th</sup> Day	30 <sup>th</sup> Day
Vali						
Azhal						
Iyyam						
Thondham						

## II. NAA:[TONGUE]

	0th Day	07th Day	14th Day	21st Day	28th Day	30th Day
Colour	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale
Taste	Sweet/ Bitter/ Sour/ Pungent/ None	Sweet/ Bitter/ Sour/ Pungent/ None	Sweet/ Bitter/ Sour/ Pungent/ None	Sweet/ Bitter/ Sour/ Pungent/ None	Sweet/ Bitter/ Sour/ Pungent/ None	Sweet/ Bitter/ Sour/ Pungent/ None
Coating	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent
Fissure	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent
Saliva	Normal/  Increased/  Decreased	Normal/  Increased/  Decreased	Normal/  Increased/  Decreased	Normal/  Increased/  Decreased	Normal/  Increased/  Decreased	Normal/  Increased/  Decreased
Dryness	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent
Glossitis	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent	Present/  Absent

## III.NIRAM: [COLOUR COMPLEXION]

Dark -  Yellow tinted -  Pale -

## IV.MOZHI: [VOICE]

Vali - Medium pitched -   
Azhal - High pitched -   
Iyyam - Low pitched -

**V.VIZHI: [EYES] (Lower palpabrel conjunctiva)**

Dark -       Yellow -       Red -       Pale -

**VI. MALAM: [BOWEL HABITS / STOOLS]**

	0 <sup>th</sup> Day	07th Day	14th Day	21stDay	28th Day	30th day
Colour	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale	Dark/ Yellow/ Red/ Pale
Consistency	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery
Quantity	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced
Constipation	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

**VII. URINE EXAMINATION:**

<b>NEERKURI</b>	<b>0<sup>th</sup> Day</b>	<b>07th day</b>	<b>14th Day</b>	<b>21st Day</b>	<b>28th Day</b>	<b>30th Day</b>
Niram [Colour]	White/ Yellowish/ Straw coloured/ Crystal clear	White/ Yellowish/ Straw Coloured/ Crystal clear	White/ Yellowish/ Straw coloured/ Crystal clear	White/ Yellowish/ Straw coloured/ Crystal clear	White/ Yellowish/ Straw coloured/ Crystal clear	White/ Yellowish/ Straw coloured/ Crystal clear
Manam [Odour]	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Nurai [Frothy]	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased
Edai [Volume]	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced
Enjal [Deposits]	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

NEIKURI	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Vali – (Serpentine fashion)						
Azhal- (Annular/Ringed fashion)						
Iyyam- (Pearl beaded fashion)						
Thondham- (Mixed fashion)						

#### VIII. SPARISAM: [PALPATORY PERCEPTION]

0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th day
Warmth/ Cold/ Sweat	Warmth/ Cold/ Sweat	Warmth/ Cold/ Sweat	Warmth/ Cold/ Sweat	Warmth/ Cold/ Sweat	Warmth/ Cold/ Sweat

#### 2. THEGI: [ TYPE OF BODY CONSTITUTION]

Vali -  Azhal-  Iyyam -  Thondha udal –

#### 3.NILAM: [ LAND WHERE PATIENT LIVED MOST]

Kurinji  Mullai  Marutham  Neithal  alai   
 (Hilly terrain) (Forest range) (Plains) (Coastal belt) (Arid regions)

#### 4. KAALAM:

Kaarkalam -  Pinpanikalam -   
 Koothirkalam -  Ilavenil -   
 Munpanikalam -  Muthuvenil -

## 5. MUKGUNAM:

Sathuvam -  Rasatham -  Thamasam -

## 6.IMPORIGAL (SENSORY ORGANS)

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Mei (Skin)						
Vai (Buccal Cavity)						
Kann (Eye)						
Sevi (Ear)						
Mooku (Nose)						

## 7. KANMENDRIYAM ( MOTOR SYSTEM)

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Kai (upper limb)						
Kaal (lower limbs )						
Vai (buccal cavity)						
Eruvaai (excretory organs)						
Karuvaai (reproductive organs)						



## 8.KOSANGAL(Sheath)

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Annamaya Kosam						
Pranamaya kosam						
Manomaya kosam						
Vignanamaya kosam						
Ananthamaya kosam						

## 9. MUKKUTRAM:[THREE HUMORS]

### A)VALI:

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Praanan						
Abaanan						
Viyaanan						
Udhaanan						
Samanan						
Naagan						
Koorman						
Kirukaran						
Devatha-than						
Dhanan-jeyan						

**B) AZHAL:**

	<b>0<sup>th</sup> Day</b>	<b>7th day</b>	<b>14th Day</b>	<b>21st Day</b>	<b>28th Day</b>	<b>30th Day</b>
Analpitham						
Ranjagam						
Saathagam						
Praasagam						
Aalosagam						

**C) IYYAM:**

	<b>0<sup>th</sup> Day</b>	<b>7th day</b>	<b>14th Day</b>	<b>21st Day</b>	<b>28th Day</b>	<b>30th Day</b>
Avalambagam						
Kilaethagam						
Pothagam						
Tharpagam						
Santhigam						

# 11. SEVEN DHATHUS: (7 SOMATIC COMPONENTS)

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Saaram [Chyme]						
Senneer [Blood]						
Oon [Muscle]						
Kozhuppu [Fat]						
Enbu [Bones]						
Moolai [Bone marrow]						
Sukkilam/ Suronitham [Genital discharges]						

## 11. SYSTEMIC EXAMINATION:

	0 <sup>th</sup> Day	7th day	14th Day	21st Day	28th Day	30th Day
Locomotor system						
Cardiovascular system						
Respiratory system						
Gastro intestinal system						
Central nervous system						
Urogenital system						
Endocrine system						

## 12. GENERAL EXAMINATION:

	0 <sup>th</sup> Day	7th Day	14th Day	21st Day	28th Day	30th Day
Height (cms)						
Weight (kg)						
Temperature (F <sup>0</sup> )						
Pulse rate (per min)						
Heart rate (per min)						
Respiratory rate (per min)						
Blood pressure (mm/Hg)						
Anaemia						
Jaundice						
Cyanosis						
Lymphadenopathy						
Pedal edema						
Clubbing						
Jugular vein pulsation						

## 13. CLINICAL SYMPTOMS

S.No	Clinical symptoms	0 <sup>th</sup> Day	7th Day	14th Day	21st Day	28th Day	30th Day
1.	Running nose						
2.	Sneezing						

S.No	Clinical symptoms	0 <sup>th</sup> day	7 <sup>th</sup> day	14 <sup>th</sup> day	21 <sup>st</sup> day	28 <sup>th</sup> day	30 <sup>th</sup> day
3.	Difficulty in breathing (Grade)						
4.	Cough with mild expectoration						
5.	Tightness of chest						
6.	Clubbing						
7.	Cyanosis						
8.	Sweating						
9.	Tachycardia						
10.	Seasonal variation						

#### **GRADE OF SEVERITY OF ASTHMA:**

**Grade I** : Able to carry out housework or job with difficulty. Sleep occasionally disturbed.

**Grade II** : Confined to chair or bed, but able to get up with difficulty. Sleep disturbed frequently.

**Grade III** : Totally confined to chair or bed. No sleep.

**Grade IV** : Immobilized and completely exhausted.

Date :

Station :

Signature of Investigator

Signature of Reader/Lecturer

Signature of HOD

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MANTHARA KAASAM(BRONCHIAL ASTHMA) WITH  
THAKKOLATHI CHOORANAM**

**FORM III**

**LABORATORY PARAMETERS - CHART**

1. S.No : \_\_\_\_\_ 2. OPD/ IPD No : \_\_\_\_\_  
 3. Bed No : \_\_\_\_\_ 4. Name : \_\_\_\_\_  
 5. Age : \_\_\_\_\_ Years 5. Gender : Male - ☐ Female - ☐

**INVESTIGATIONS:**

**I.BLOOD**

S.No		NORMAL VALUES	BEFORE TREATMENT	AFTER TREATMENT
1.	TC (million/ cu.mm)	Male - 4.30 – 5.60 Female - 4.00 – 5.20		
2.	DC	$3.54 - 9.06 \times 10^3 / \text{mm}^3$		
	Neutrophils	40 – 70%		
	Lymphocytes	20 – 50%		
	Monocytes	4 – 8 %		
	Eosinophils	0 – 6 %		
	Basophils	0 – 2%		
3.	ESR	Male – 0 – 15 mm/hr Female – 0 – 20 mm/hr		
	$\frac{1}{2}$ hr			
	1 hr			
4.	Haemoglobin	Male - 13.3 – 16.2 g/dL Female – 12.0 – 15.8 g/dL		
5.	Blood sugar	Fasting – 75 – 110mg/dL		

	(F/R/PP)	Random – 80 – 170mg/dL		
6.	Blood urea	20 – 40 mg/dL		
7.	Serum creatinine	Male - 0.6 – 1.2 ng/mL Female – 0.5 – 0.9 ng/mL		
8.	Serum cholesterol	< 200 Desirable 200 – 239 Borderline high ≥ 240 High		

## II. URINE:

Albumin -

Sugar -

Deposits -

## III. RADIOLOGICAL INVESTIGATION:

Chest X – ray – PA view

## IV. PULMONARY FUNCTION TEST(SPIROMETRY STUDY) :

Date :

Station :

Signature of Investigator

Signature of HOD

Signature of Reader/ Lecturer

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THAKKOLATHI CHOORANAM**

**FORM IV**

**PATIENT INFORMATION SHEET**

- Bronchial asthma is an airway inflammation which occurs due to bronchial constriction.
- It may be a hereditary disease.
- It may be due to exposure to cold air, tobacco smoke, dust, acrid fumes.
- It may get aggravated in emotional stress.
- Exposure to organic material such as pollen, mite containing house dust, feathers, animal dander and fungal spores are also the allergens responsible for asthma.
- Many herbal and mineral siddha preparations are available to treat Bronchial asthma.
- The trial drug is prepared at the P.G Gunapadam lab of government siddha medical college & hospital, Palayamkottai, under the direct supervision of teaching faculties of P.G Pothu Maruthuvam and Gunapadam.

**DETAILS OF THE TRIAL DRUG:**

**1. . THAKKOLATHI CHOORANAM**

DOSAGE : Three grams, three times after food

ADJUVANT : Hot water

DURATION : 30 days .

- ❖ Patients are advised to avoid betel chewing, tobacco and smoking.
- ❖ Patients are advised to avoid exposure to allergens and cold climate.
- ❖ Patients are recommended to avoid stress and practice yoga including pranayama.

**அரசினர் சித்த மருத்துவக்கல்லூரி & மருத்துவமனை**



பாளையங்கோட்டை, திருநெல்வேலி மாவட்டம்

பட்டமேற்படிப்பு பொது மருத்துவத்துறை

தக்கோலாதிச் சூரணத்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ  
ஆய்வு

தகவல் படிவம்

- ❖ மந்தார காசம் நோயானது அழற்சியினால் ஏற்படும் சுவாச குழாயின் இறுக்கத்தினால் ஏற்படக்கூடியது.
- ❖ இந்நோயானது பரம்பரையாகவும் வரலாம்.
- ❖ சித்த மருத்துவத்தில் அதிக அளவு மூலிகைகள் மற்றும் தாதுப் பொருள்கள் இந்நோய்க்கு மருந்தாகப் பயன்படுகிறது.
- ❖ ஏற்கனவே உபயோகத்தில் உள்ள இது போன்ற மருந்து இதுவரை நோயாளிகளிடம் எந்த வித பக்க விளைவுகளை ஏற்படுத்தவில்லை.
- ❖ இந்த மருந்து சிறப்பாக மந்தார காச நோய்க்காக அங்கீகரிக்கப்பட்ட சித்த மருத்துவ நூலில் கூறப்பட்டுள்ளது.
- ❖ மேற்கண்ட மருந்தானது அரசினர் சித்த மருத்துவக் கல்லூரி, பாளையங்கோட்டையில் உள்ள பட்டமேற்படிப்பு குணப்பாடம் மருந்து செய் ஆய்வகத்தில் செய்து முடிக்கப்பட்டது.
- ❖ இந்த ஆராய்ச்சி சம்பந்தமாக சில கேள்விகளை கேட்கவும் தேவையான ஆய்வக பரிசோதனைக்கு தங்களை உட்படுத்தவும் உள்ளேன்.
- ❖ இது சம்பந்தமான தங்களது அனைத்து விவரங்களும் ரகசியமாக வைக்கப்படும் என உறுதியளிக்கிறேன்.
- ❖ இந்த ஆராய்ச்சியின் போது உடலுக்கு வேறுபாதிப்பு ஏற்படும் பட்சத்தில் அரசினர் சித்த மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை, பாளையங்கோட்டையில் தக்க சிகிச்சை அளிக்கப்படும்.
- ❖ இந்த ஆராய்ச்சியில் சேர்ந்த பிறகு உங்களுக்கு விருப்பம் இல்லையெனில் எப்போது வேண்டுமானாலும் விலகி கொள்ளலாம்.
- ❖ உணவு முறையில் மருத்துவரால் கூறப்படும் பத்தியம் காக்குமாறு அறிவுறுத்தப்படுகிறது.
- ❖ மேலும் இந்த ஆராய்ச்சிக்கு IEC அனுமதிச்சான்று பெறப்பட்டுள்ளது.

**அரசினர் சித்த மருத்துவக்கல்லூரி & மருத்துவமனை**

**பாளையங்கோட்டை, திருநெல்வேலி மாவட்டம்.**

**பட்டமேற்படிப்பு பொது மருத்துவத்துறை**

**தக்கோலாதிச் சூரணத்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ  
ஆய்வு**

**FORM IV A**

**ஒப்புதல் படிவம்**

**ஆய்வாளரால் சான்றளிக்கப்பட்டது**

நான் இந்த ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி : கையொப்பம் :

இடம் : பெயர் :

**நோயாளியின் ஒப்புதல்**

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும் மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறைப் பற்றியும் இந்த மருத்துவத்தை தொடர்ந்து எனது உடல் இயக்கத்தையும் கண்காணிக்கவும், அதனை பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிதோனைகள் பற்றியும் திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல், எப்பொழுது வோண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக்கொள்ளும் உரிமையைக் கொண்டு மந்தார காச நோய்க்கான தக்கோலாதிச் சூரணத்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்வுக்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

**மருந்தின் பெயர்:**

**தக்கோலாதிச் சூரணம் - 3 கிராம், 3 வேளை உணவிற்கு பின் வெந்நீரில் - 30 நாட்கள்**

தேதி : கையொப்பம் :

இடம் : பெயர் :

GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,

PALAYAMKOTTAI, TIRUNELVELI DISTRICT.

DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE - II RANDOMIZED OPEN CLINICAL TRIAL ON  
MANTHARA KAASAM(BRONCHIAL ASTHMA) WITH  
THAKKOLATHI CHOORANAM

FORM IV B

DIETARY ADVICE FORM

- குளிர்ந்த நீர், குளிர்பானம், குளிர்ச்சியான பழங்கள் நீக்கவும்.
- பஞ்சாலை, சிமெண்ட் தொழிற்சாலை மற்றும் தூசு நிறைந்த இடத்தில் வேலை செய்வதை தவிர்க்கவும்.
- புகை பிடித்தல், மது அருந்துதல், புகையிலை தவிர்க்க வேண்டும்.
- சிற்றீச்சம்பாயில் படுத்து உறங்க கப நோய்கள் நீங்கும்.
- பிராணாயாமம் (மூச்சுப் பயிற்சி) செய்து பழக வேண்டும்.
- சில யோகாசனங்கள் (புஜங்காசனம், சக்ராசனம், மச்சாசனம், மயூராசனம், பாதஹஸ்தாசனம், அரை மச்சேந்திராசனம், திரிகோனாசனம், சவாசனம்) செய்வது நன்று.

➤ **சேர்க்க வேண்டிய உணவு வகைகள்:**

காய்: கத்திரி, பேய்ப்புடல், அவரை, கண்டங்கத்திரி, அத்தி, பீர்க்கு, மாவடு, வாழைக்காய், முருங்கை, சுண்டை.

**கிழங்கு வகைகள்:** முள்ளங்கி, ஈருள்ளி, இஞ்சி, கருணைத்தண்டு.

**கீரை:** மணத்தக்காளி, கரிசாலை, பீளை, வசலை, சிறுகீரை, மணலிக்கீரை, பரட்டைக்கீரை, புளியாரைக் கீரை.

➤ **தவிர்க்க வேண்டியவை உணவு வகைகள்:**

கடுகு, மாங்காய், பூண்டு, புகையிலை, பீர்க்கு, பெருங்காயம், நல்லெண்ணெய், தேங்காய், பலாப்பழம், கொள்ளு, மது, வெங்காயம், வெல்லம், தயிர், வெண்ணெய், நெய், மீன், கருவாடு.

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

**PALAYAMKOTTAI, TIRUNELVELI DISTRICT**

**DEPARTMENT OF POTHU MARUTHUVAM**

**PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON  
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH**

**THAKKOLATHI CHOORANAM**

**FORM IV C**

**WITHDRAWAL FORM**

Name: \_\_\_\_\_ OPD/ IPD number: \_\_\_\_\_

Age : \_\_\_\_\_ Sex : \_\_\_\_\_

Date of trial commencement: \_\_\_\_\_

Date of withdrawal from trial: \_\_\_\_\_

**Reasons for withdrawal:**

- Long absence at reporting : Yes ☐ No ☐
- Irregular treatment : Yes ☐ No ☐
- Shift of locality : Yes ☐ No ☐
- Increase in severity of symptoms : Yes ☐ No ☐
- Development of severe adverse drug reactions : Yes ☐ No ☐

Date :

Station :

Signature of Investigator

Signature of HOD

Signature of Reader/ Lecturer

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

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MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH**

**THAKKOLATHI CHOORANAM**

**FORM IV D**

**ADVERSE DRUG REACTION FORM**

Name: \_\_\_\_\_ OPD/ IPD No : \_\_\_\_\_

Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Date of trial commencement: \_\_\_\_\_

Date of withdrawal from trial: \_\_\_\_\_

Drug, dosage, route of administration: **THAKKOLATHI CHOORANAM** – 3 gm

(Internal) Three times a day after food with hot water.

Laboratory findings: \_\_\_\_\_

Concomitant drug : \_\_\_\_\_

Description of adverse reaction: \_\_\_\_\_

Management of adverse drug reaction : \_\_\_\_\_

Adjustment of dose of drug if any : \_\_\_\_\_

Patient outcome : \_\_\_\_\_

Date :

Station :

Signature of Investigator

Signature of HOD

Signature of Reader/ Lecturer

**GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,**

**PALAYAMKOTTAI, TIRUNELVELI DISTRICT**

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MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH**

**THAKKOLATHI CHOORANAM**

**FORM IV –E**

**(DRUG COMPLIANCE FORM)**

Name : \_\_\_\_\_ Age/ Sex : \_\_\_\_\_ S. No : \_\_\_\_\_

OPD/ IPD No : \_\_\_\_\_ Date : \_\_\_\_\_ Bed No : \_\_\_\_\_

Name Of The Drug : **THAKKOLATHI CHOORANAM**

Drugs issued date :

Drugs returned date :

S.NO	DATE	DRUG TAKEN TIME	
		MORNING/TIME	EVENING/TIME
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			
Day 8			
Day 9			

S.NO	DATE	MORNING/TIME	EVENING/TIME
Day 10			
Day 11			
Day 12			
Day 13			
Day 14			
Day 15			
Day 16			
Day 17			
Day 18			
Day 19			
Day 20			
Day 21			
Day 22			
Day 23			
Day 24			
Day 25			
Day 26			
Day 27			
Day 28			
Day 29			
Day 30			

Date :

Signature of Reader/ Lecturer:

Station:

Signature of Investigator :

Signature of HOD :

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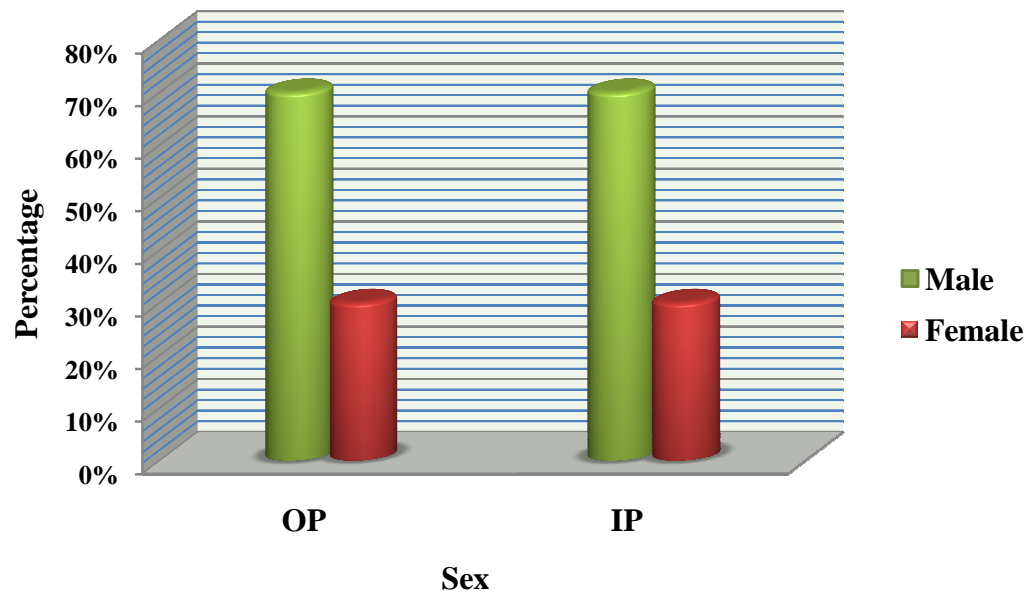
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- 2.Yagobu vaidhya chinthamani 700
- 3.Siddha Maruthuvam. - *K.M. Kuppuswamy Mudhaliar. HPIM.*
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- *S.P.Ramachandran.*
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- *Dr.C.S.Uthamarayan.*
- 13.Gunapadam - mooligai vaguppu.  
a. *Dr.S.Murugesu mudhaliyar.*



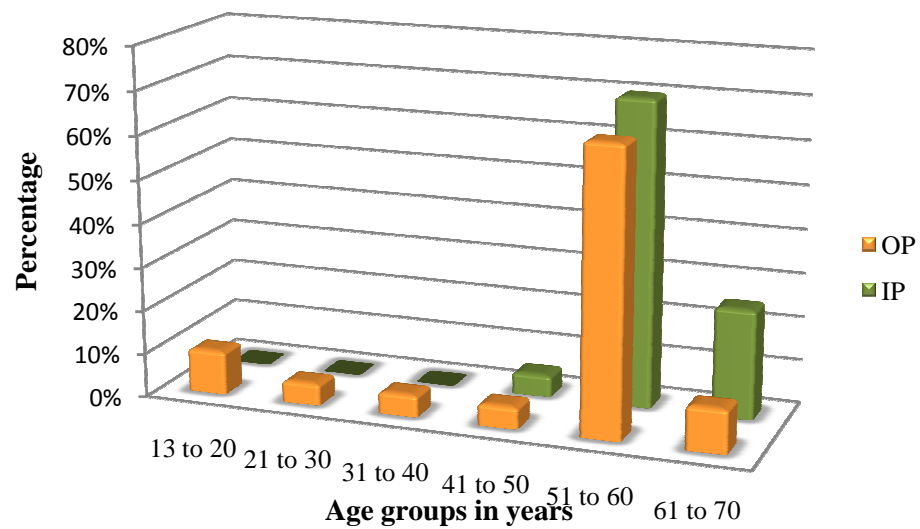
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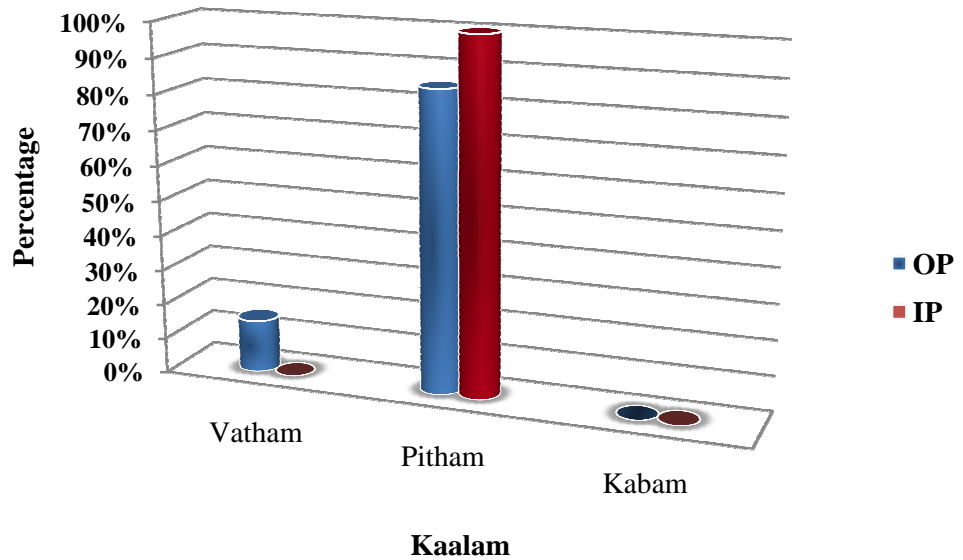
## Sex Distribution



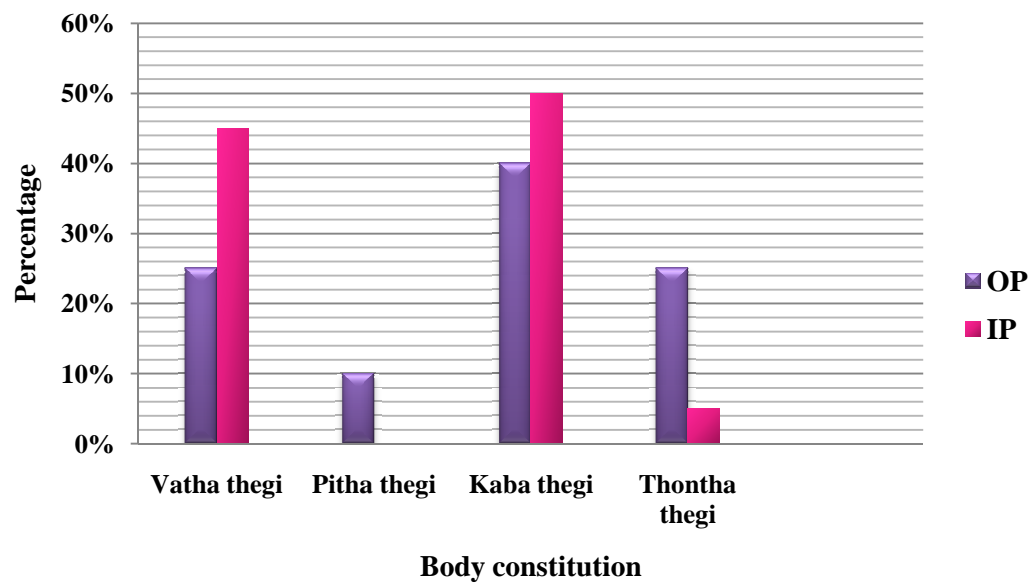
## Age Distribution



## Kaalam Distribution

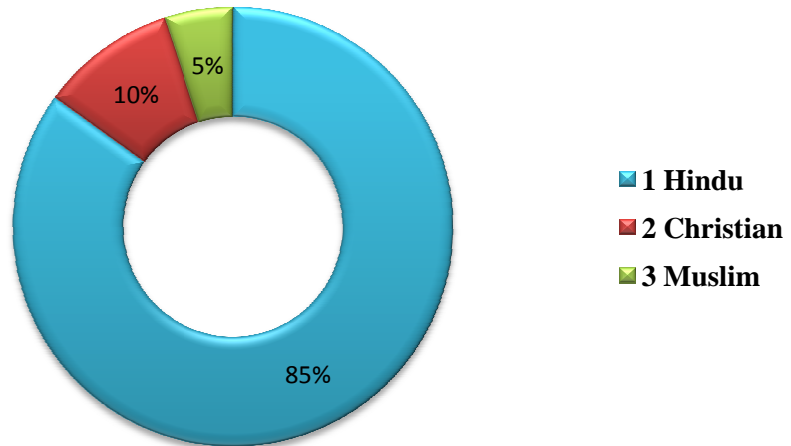


## Constitutions of body

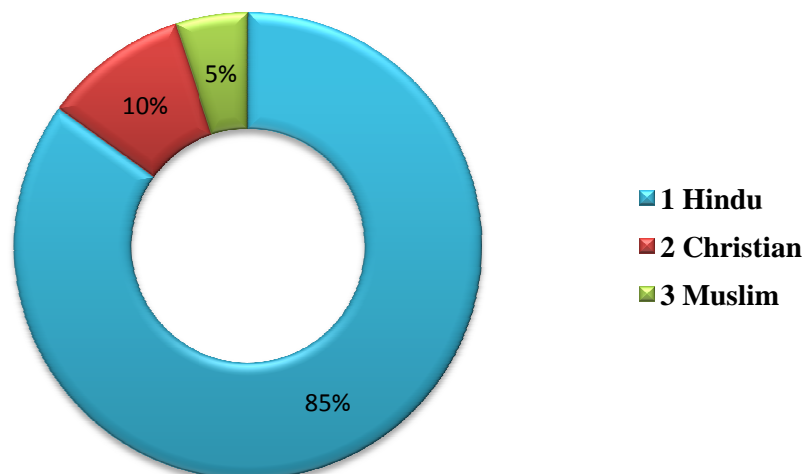


## Religion Distribution

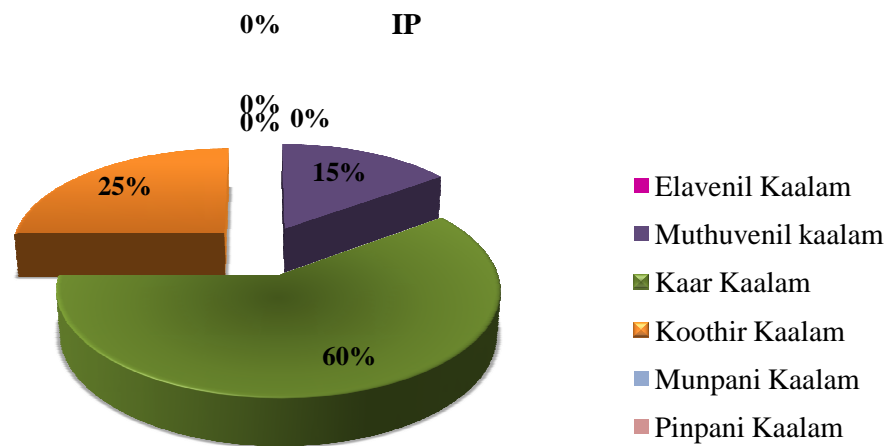
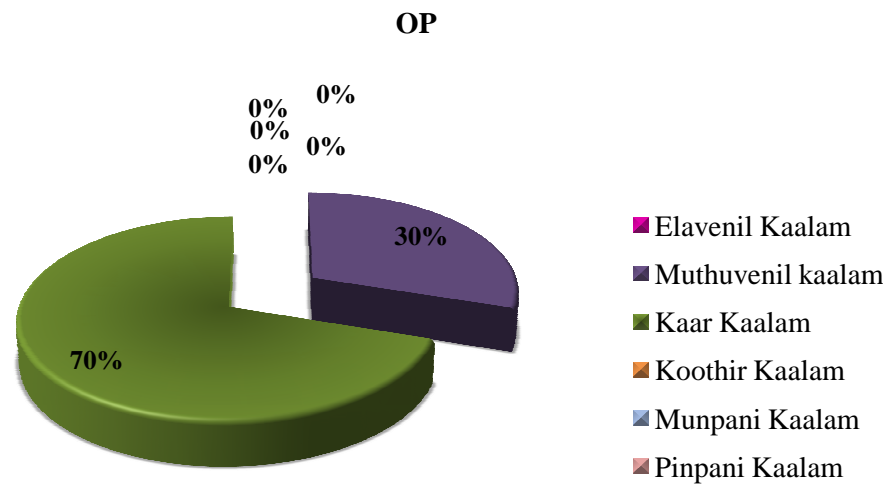
OP



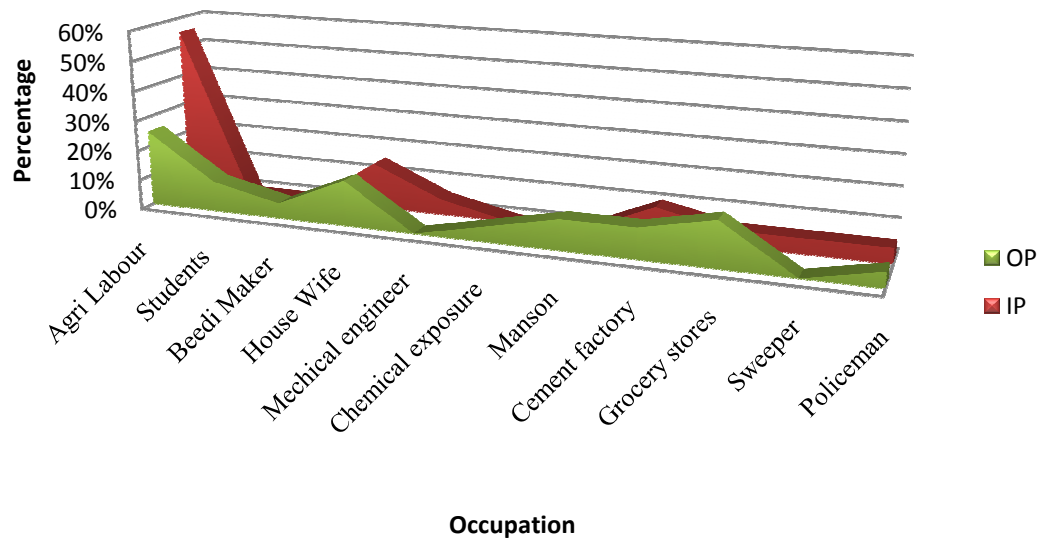
IP



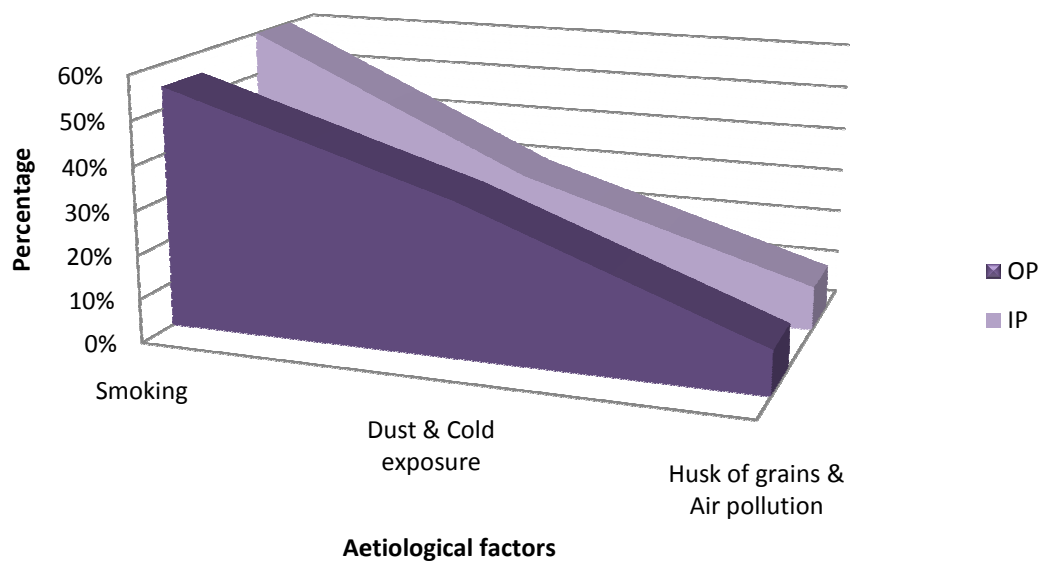
## Paruvakaalam Distribution



## Occupation



## Aetiological factors



**Soc**





### LABORATORY INVESTIGATION

S.No	IP. NO	TC		DC						ESR				Bl.Sugar		Bl.Urea	
				N		L		E		BT		AT		BT	AT	BT	AT
		BT	AT	BT	AT	BT	AT	BT	AT	1/2 hr	1 hr	1/2 hr	1 hr				
1	1916	9400	9300	59	62	32	32	9	6	20	28	15	25	72	90	24	24
2	1962	6900	6700	68	58	30	40	2	2	20	30	8	17	97	123	31	25
3	2295	8700	8300	56	67	40	30	4	3	15	26	10	26	80	115	22	24
4	2331	8500	8600	58	64	38	33	4	3	11	23	6	12	123	95	24	26
5	2416	8500	7200	61	64	35	34	4	2	6	12	20	41	95	120	28	22
6	2421	9000	9400	71	65	27	32	2	3	14	20	37	61	92	141	21	17
7	2627	8700	8100	60	71	34	27	6	2	13	27	10	22	110	100	23	25
8	2741	7900	8200	59	66	37	33	4	1	12	20	5	10	112	110	24	24
9	2790	9150	9800	60	70	32	27	8	3	10	24	12	20	138	155	21	17
10	2851	7200	7100	64	61	34	36	2	3	20	41	12	35	120	116	22	16
11	2909	8300	8600	61	62	36	35	3	3	6	13	3	7	138	100	28	32
12	2913	9000	9300	59	62	27	33	14	5	12	26	16	22	130	122	21	20
13	2967	9100	8400	63	70	36	28	1	2	4	10	3	6	69	110	22	20
14	3062	8900	8800	75	65	23	32	2	3	15	30	5	12	107	90	27	30
15	3030	8600	8700	68	64	23	34	9	2	6	12	3	6	98	100	26	28
16	3323	9000	9100	70	70	26	27	4	3	20	35	13	20	100	95	16	20
17	3328	7000	7200	68	62	28	35	4	3	14	22	8	18	162	120	23	25
18	3386	7700	7800	60	68	37	30	3	2	12	25	6	12	85	100	14	14
19	3451	9500	9400	68	67	28	30	4	3	15	35	8	16	96	110	27	30
20	3745	8900	8700	64	66	31	32	5	2	10	20	5	10	75	96	34	30

### LABORATORY INVESTIGATION

S.No	OP. NO	TC		DC						ESR				Bl.Sugar		Bl.Urea	
				N		L		E		BT		AT		BT	AT	BT	AT
		BT	AT	BT	AT	BT	AT	BT	AT	1/2 hr	1 hr	1/2 hr	1 hr				
1	43406	7300	7400	56	62	40	36	4	2	8	20	4	8	108	100	20	16
2	44399	7900	7800	57	61	40	38	3	1	13	27	12	15	94	105	18	22
3	46389	6500	6800	62	53	32	46	6	1	10	22	4	8	77	85	23	22
4	46406	9900	9800	54	57	40	40	6	3	10	20	4	8	110	105	23	20
5	48463	7500	7600	62	53	35	45	3	2	4	10	4	8	116	123	21	21
6	48876	8100	8700	55	60	42	38	3	2	2	7	4	8	89	95	20	24
7	49461	9800	9000	65	70	34	29	1	1	5	11	4	8	127	85	14	13
8	50506	9100	9200	71	69	28	29	1	2	4	10	5	12	109	98	26	21
9	50754	9500	9400	53	57	38	41	9	2	15	32	10	15	96	100	28	26
10	51847	9000	8800	60	66	35	32	5	2	12	28	7	17	104	79	22	26
11	51928	6900	7000	62	68	27	30	11	3	20	45	10	21	136	130	21	24
12	52317	9000	9500	59	61	37	38	4	1	10	22	4	8	90	95	13	13
13	55702	9900	8100	72	65	22	32	6	2	14	28	12	20	95	104	14	20
14	55932	8700	8900	64	65	24	30	12	5	10	24	8	22	104	112	17	15
15	57229	7200	7400	49	65	50	33	1	2	10	22	8	11	82	118	20	24
16	58696	8900	9200	56	64	38	34	6	2	15	34	4	8	88	114	25	26
17	60216	8100	8400	60	63	37	36	3	1	12	25	4	8	110	103	18	21
18	63619	7900	8100	65	67	30	32	5	1	16	22	5	9	89	110	22	22
19	65948	8700	8800	66	57	31	42	3	1	4	9	5	9	97	90	16	15
20	65999	8500	8500	67	66	30	33	3	1	9	18	7	14	88	112	24	26

**LABORATORY INVESTIGATION**

S.No	IP NO	Before treatment				After treatment				Before treatment			After treatment		
		Albumin	Sugar	Deposits		Albumin	Sugar	Deposits		Ova	Cyst	Occult Blood	Ova	Cyst	Occult blood
				Pus Cells	Epi Cells			Pus Cells	Epi Cells						
1	1916	Nil	Nil	2-3	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
2	1962	Nil	Nil	8-10	few	Nil	Nil	3-7	few	-	-	-	-	-	-
3	2295	Nil	Nil	1-2	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
4	2331	Nil	Trace	NAD	3-5	Nil	Nil	NAD	1-2	-	-	-	-	-	-
5	2416	Nil	Nil	1-2	few	Nil	Nil	few	NAD	-	-	-	-	-	-
6	2421	Nil	Nil	1-2	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
7	2627	Nil	Nil	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
8	2741	Nil	Nil	1-2	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
9	2790	Nil	Nil	2-3	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
10	2851	Nil	Nil	few	NAD	Nil	Nil	few	NAD	-	-	-	-	-	-
11	2909	Nil	Trace	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
12	2913	Nil	Nil	2-3	few	Nil	Nil	1-2	NAD	-	-	-	-	-	-
13	2967	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
14	3062	Trace	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
15	3030	Nil	Nil	2-5	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
16	3323	Nil	Nil	NAD	1-2	Nil	Nil	NAD	1-2	-	-	-	-	-	-
17	3328	Nil	Nil	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
18	3386	Nil	Nil	NAD	1-3	Nil	Nil	NAD	1-2	-	-	-	-	-	-
19	3451	Nil	Nil	few	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
20	3745	Nil	Nil	few	NAD	Nil	Nil	few	NAD	-	-	-	-	-	-

NAD - No Abnormality Detected

### LABORATORY INVESTIGATION

S.No	OP. NO	Before treatment				After treatment				Before treatment			After treatment		
		Albumin	Sugar	Deposits		Albumin	Sugar	Deposits		Ova	Cyst	Occult Blood	Ova	Cyst	Occult blood
				Pus Cells	Epi Cells			Pus Cells	Epi Cells						
1	43406	Nil	Nil	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
2	44399	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
3	46389	Nil	Nil	1-2	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
4	46406	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
5	48463	Nil	Nil	1-2	few	Nil	Nil	NAD	NAD	-	-	-	-	-	-
6	48876	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
7	49461	Nil	Nil	2-3	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
8	50506	Nil	Nil	few	NAD	Nil	Nil	3-8	NAD	-	-	-	-	-	-
9	50754	Nil	Nil	NAD	1-3	Nil	Nil	NAD	NAD	-	-	-	-	-	-
10	51847	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
11	51928	Nil	Nil	2-4	NAD	Nil	Nil	1-2	NAD	-	-	-	-	-	-
12	52317	Nil	Nil	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
13	55702	Nil	Nil	NAD	2-3	Nil	Nil	NAD	NAD	-	-	-	-	-	-
14	55932	Nil	Trace	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
15	57229	Nil	Nil	1-2	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
16	58696	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
17	60216	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
18	63619	Nil	Nil	1-2	0-1	Nil	Nil	NAD	NAD	-	-	-	-	-	-
19	65948	Nil	Nil	NAD	NAD	Nil	Nil	NAD	NAD	-	-	-	-	-	-
20	65999	Nil	Nil	NAD	1-2	Nil	Nil	NAD	1-2	-	-	-	-	-	-

NAD - No Abnormality Detected

### LABORATORY INVESTIGATION

S.No	IP.No	Name	Hb gm%		Serum Cholesterol mg%	
			BT	AT	BT	AT
1	1916	Mr. Ramadoss	11	11.5	221	190
2	1962	Mr. Ganapathy	5.5	7.4	144	142
3	2295	Mr. Vasantha kumar	10.4	11	162	154
4	2331	Mrs. Petchiammal	11.4	11.2	210	180
5	2416	Mr. Chelliah	11	12	221	245
6	2421	Mr. Lakshmanan	9.5	11.8	162	150
7	2627	Mrs. Annammal	10.5	11.8	186	172
8	2471	Mr. Gurusamy	11.8	12	190	185
9	2790	Mr. Selvaraj	11.2	11.5	160	134
10	2851	Mr. Santhanam	12	12	245	200
11	2909	Mr. Thangavel	11	11.5	138	126
12	2913	Mr. Sankarapandi	11.4	12	122	120
13	2967	Mr. Ganesan	12.5	12	182	188
14	3062	Mrs. Gandhimathy	10.5	11	174	170
15	3030	Mrs. Rohini	12.5	12	160	165
16	3323	Mr. Navabjohn	11	11	150	135
17	3328	Mrs. Subbulakshmi	10.5	11	149	185
18	3386	Mrs. Madathi	9.6	10.8	214	190
19	3451	Mr. Chelladurai	10.8	11	180	160
20	3745	Mr. Madasamy	12	11.5	175	165

### LABORATORY INVESTIGATION

S.No	OP.No	Name	Hb gm%		Serum Cholesterol mg%	
			BT	AT	BT	AT
1	43406	Mr. Chelladurai	12	12	212	180
2	44399	Mr. Ramakrishnan	11	12	251	200
3	46389	Mr. Selvaraj	11	13	171	180
4	46406	Mr. Ahamed mydeen	12.5	12	211	180
5	48463	Mr. Kumarsubramaniyan	13	13.5	174	180
6	48876	Mr. Vishal	12.5	12	156	128
7	49461	Mrs. Selvi	12	12.5	206	190
8	50506	Mr. Chandra bose	11	11.8	181	160
9	50754	Mr. Manaalam	10	11	142	150
10	51847	Mrs. Muthulakshmi	11.5	12	179	153
11	51928	Mr. Natarajan	11.5	12.2	184	170
12	52317	Mr. Robert	12	12	138	120
13	55702	Mrs. Arputhamani	11	12	194	200
14	55932	Mr. Baskar	12	13	146	148
15	57229	Mrs. Rajakili	12	12.5	215	210
16	58696	Mr. Sudalaimadan	10.4	11	176	152
17	60216	Mr. Prabhakar	11.1	11	148	130
18	63619	Mr. Santhanam	10.8	11	229	220
19	65948	Mrs. Mariyammal	10.8	12	194	180
20	65999	Mrs. Gomathy	10.8	11.5	178	166

**CASE SUMMARY**

<b>S.NO</b>	<b>IP NO</b>	<b>NAME</b>	<b>AGE</b>	<b>SEX</b>	<b>DOA</b>	<b>DOD</b>	<b>TRATED DAYS</b>	<b>RESULT</b>
1	1916	Mr. Ramadoss	57	M	14.06.12	13.07.12	30 DAYS	Good
2	1962	Mr. Ganapathy	55	M	18.06.12	17.07.12	30 DAYS	Good
3	2295	Mr. Vasanthakumar	61	M	17.07.12	31.07.12	15 DAYS	Good
4	2331	Mrs. Petchiammal	60	F	19.07.12	08.08.12	20 DAYS	Good
5	2416	Mr. Chelliah	60	M	25.07.12	21.08.12	28 DAYS	Good
6	2421	Mr. Lakshmanan	63	M	25.07.12	15.08.12	20 DAYS	Good
7	2627	Mrs. Annammal	54	F	09.08.12	28.08.12	15 DAYS	Good
8	2741	Mr. Gurusamy	60	M	20.08.12	30.08.12	11 DAYS	Moderate
9	2741	Mr. Selvaraj	58	M	23.08.12	19.09.12	27 DAYS	Good
10	2851	Mr. Santhanam	55	M	28.08.12	26.09.12	30 DAYS	Good
11	2909	Mr. Thangavel	60	M	04.09.12	15.09.12	12 DAYS	Poor
12	2913	Mr. Sankarapandi	63	M	04.09.12	17.09.12	14 DAYS	Good
13	2967	Mr. Ganesan	41	M	07.09.12	27.09.12	21 DAYS	Moderate
14	3062	Mrs. Gandhimathy	55	F	14.09.12	24.09.12	11 DAYS	Good
15	3030	Mrs. Rohini	65	F	15.09.12	29.09.12	15 DAYS	Good
16	3323	Mr. Navabjohn	56	M	28.09.12	24.10.12	27 DAYS	Good
17	3328	Mrs. Subbulakshmi	60	F	28.09.12	19.10.12	22 DAYS	Good
18	3386	Mrs. Madathi	64	F	02.10.12	22.10.12	20 DAYS	Poor
19	3451	Mr. Chelladurai	55	M	06.10.12	25.10.12	20 DAYS	Good
20	3745	Mr. Madasamy	52	M	01.11.12	20.11.12	20 DAYS	Moderate

**CASE SUMMARY**

<b>S.NO</b>	<b>OP. NO</b>	<b>NAME</b>	<b>AGE</b>	<b>SEX</b>	<b>DOA</b>	<b>DOD</b>	<b>TRATED DAYS</b>	<b>RESULT</b>
1	43406	Mr. Chelladurai	58	M	11.06.12	16.07.12	43 DAYS	Good
2	44399	Mr. Ramakrishnan	58	M	14.06.12	26.07.12	50 DAYS	Good
3	46389	Mr. Selvaraj	60	M	21.06.12	19.07.12	36 DAYS	Good
4	46406	Mr. Ahmed mydeen	52	M	21.06.12	26.07.12	43 DAYS	Moderate
5	48463	Mr.Kumarsubramaniyan	50	M	28.06.12	26.07.12	36 DAYS	Good
6	48876	Mr. Vishal	13	M	29.06.12	27.07.12	36 DAYS	Good
7	49461	Mrs. Selvi	39	F	02.07.12	06.08.12	43 DAYS	Good
8	50506	Mr. Chandrabose	53	M	05.07.12	02.08.12	36 DAYS	Good
9	50754	Mr. Manaalam	60	M	06.07.12	03.08.12	36 DAYS	Poor
10	51847	Mrs. Muthulakshmi	51	F	10.07.12	07.08.12	36 DAYS	Good
11	51928	Mr. Natarajan	60	M	10.07.12	07.08.12	36 DAYS	Good
12	52317	Mr. Robert	18	M	11.07.12	08.08.12	36 DAYS	Moderate
13	55702	Mrs. Arputhamani	62	F	23.07.12	20.08.12	36 DAYS	Good
14	55932	Mr. Baskar	52	M	24.07.12	22.08.12	37 DAYS	Good
15	57229	Mrs. Rajakili	52	F	28.07.12	25.08.12	36 DAYS	Good
16	58696	Mr. Sudalaimadan	64	M	02.08.12	31.08.12	37 DAYS	Good
17	60216	Mr. Prabhakar	26	M	07.08.12	04.09.12	36 DAYS	Good
18	63619	Mr. Santhanam	58	M	18.08.12	15.09.12	36 DAYS	Moderate
19	65948	Mrs. Mariyammal	60	F	27.08.12	24.09.12	36 DAYS	Good
20	65999	Mrs. Gomathy	52	F	27.08.12	25.09.12	37 DAYS	Good



# MALAR MICRO DIAGNOSTIC CENTRE

134/59-1, Tiruchendur Road, Palayamkottai - 627002  
Phone - Lab : 2583954, Res : 2583955

## REPORT OF MICROBIOLOGICAL ANALYSIS OF THAKKOLATHI CHOORANAM

S.No	Test Drug	Organism (Culture)	Susceptibility	Test zone size	Control zone size
1.	THAKKOLATHI CHOORANAM	Escherichia coli	Sensitive	16mm	23mm
2.		Klebsiella	Resistant		
3.		Proteus	Moderately sensitive	15mm	22mm
4.		Staphylococcus aureus	Moderately sensitive	15mm	22mm
5.		Streptococcus pneumonia	Resistant		
6.		Pseudomonas aeruginosa	Resistant		



**Dr. R. NAPOLEON** B.Sc. M.D  
CONSULTANT MICROBIOLOGIST.  
TIRUNELVELI.

Dear Doctor,

Thank you for your reference. If the result is not correlating with the clinical impression, please inform us to repeat the test with a fresh sample.



# THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

69, Anna Salai, Guindy, Chennai - 32.

## DEPARTMENT OF SIDDHA

### CERTIFICATE OF PARTICIPATION

This is to certify that Dr. .... **D. KALAISELVI** .....

has participated as ~~Resource Person~~ / Delegate in the Workshop on

**"Research Methodology & Biostatistics"** for AYUSH Post Graduates &

Researchers organized by the Dept. of Siddha from ~~04..07..2011~~ to ~~08..07..2011~~

  
Dr. N. Kabilan  
Prof. & Head




  
Dr. Sudha Seshayyan  
Registrar i/c

  
Dr. Mayil Vahanan Natarajan  
Vice-Chancellor

**GOVT. SIDDHA MEDICAL COLLEGE,  
PALAYAMKOTTAI,  
TIRUNELVELI – 627002.  
SCREENING COMMITTEE**

**Candidate Reg No: 32101003**

This is to certify that the dissertation topic MANTHARA KAASAM (BRONCHIAL ASTHMA) and the drug THAKKOLATHI CHOORANAM have been approved by the screening committee.

S.No	Name	Signature
1.	Prof. Dr. N. CHANDRAMOHAN DOSS, M.D (S) Principal & Chairman	
2.	Prof. Dr. R. THANGAMONEY, M.D (S)	
3.	Dr. A. SUBRAMANIAN, M.D (S)	

(Kindly make sure that the minutes of the meeting duly signed by all the participation are maintained by the college office)

சுக்கு



மிளகு



திப்பிலி



தக்கோலம்



கிராம்பு



ஏலக்காய்





சிறுதேக்கு



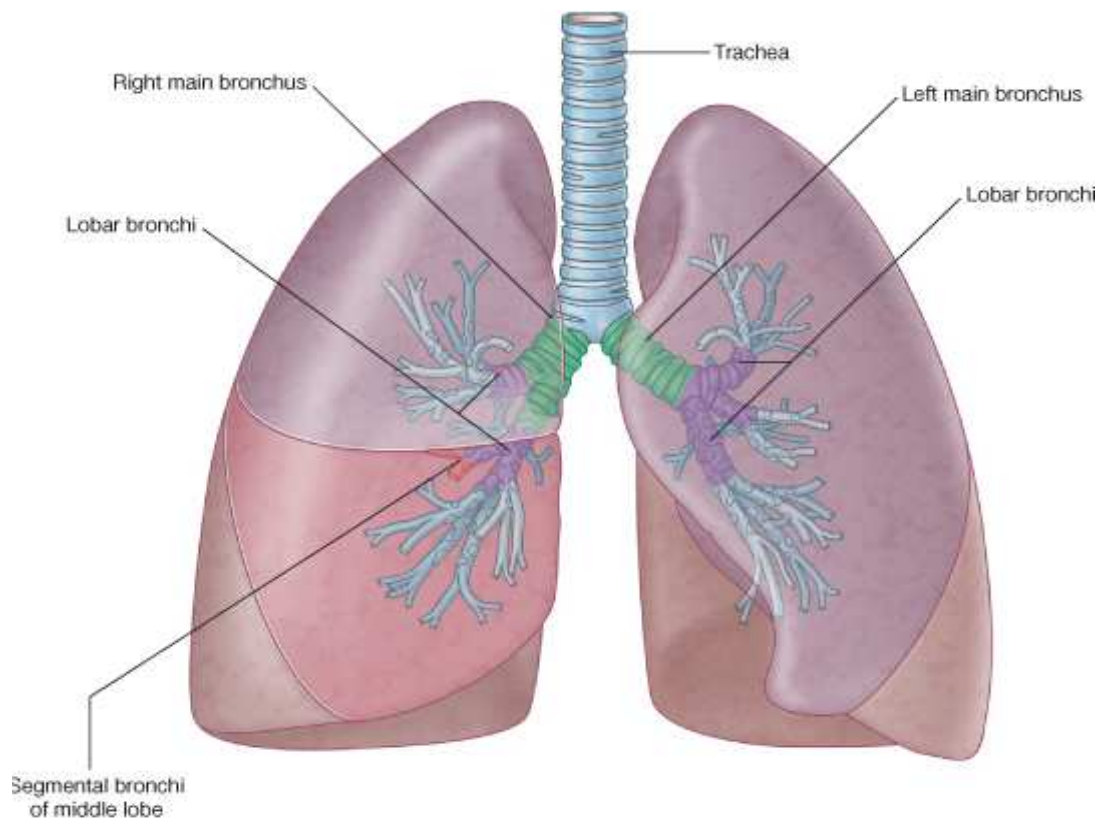
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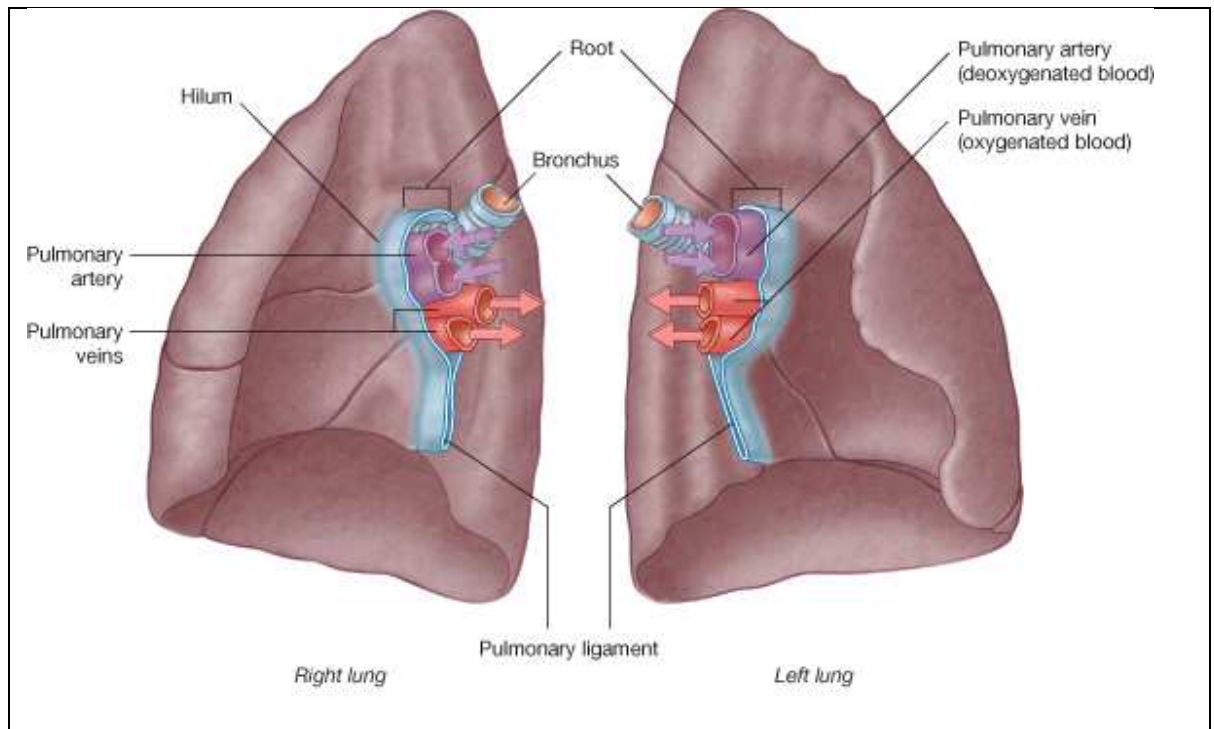


தக்கோலாதிச் சூரணம்



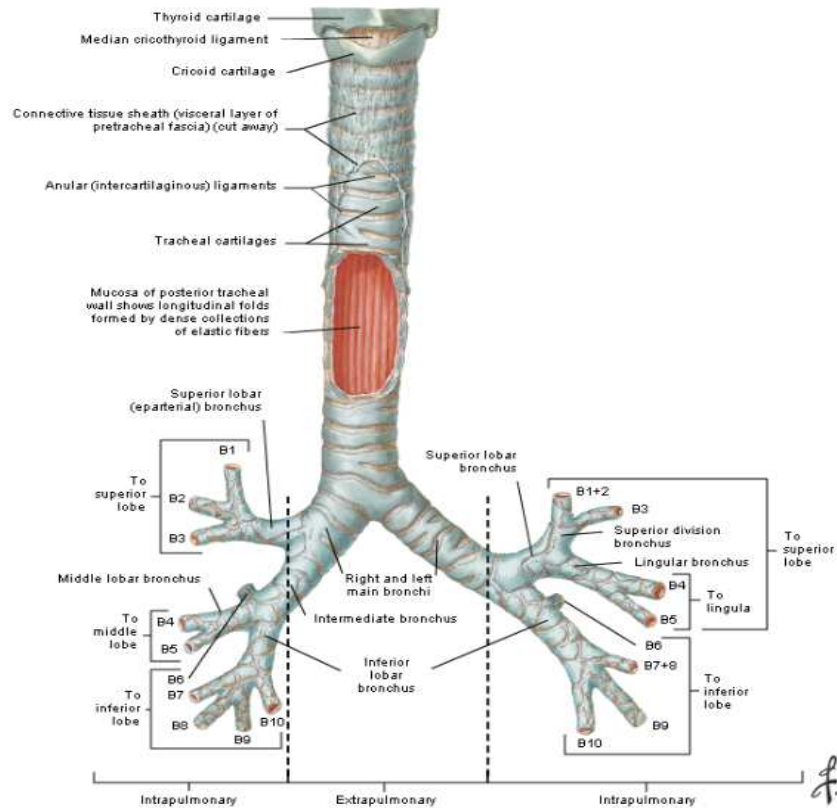
# LUNGS



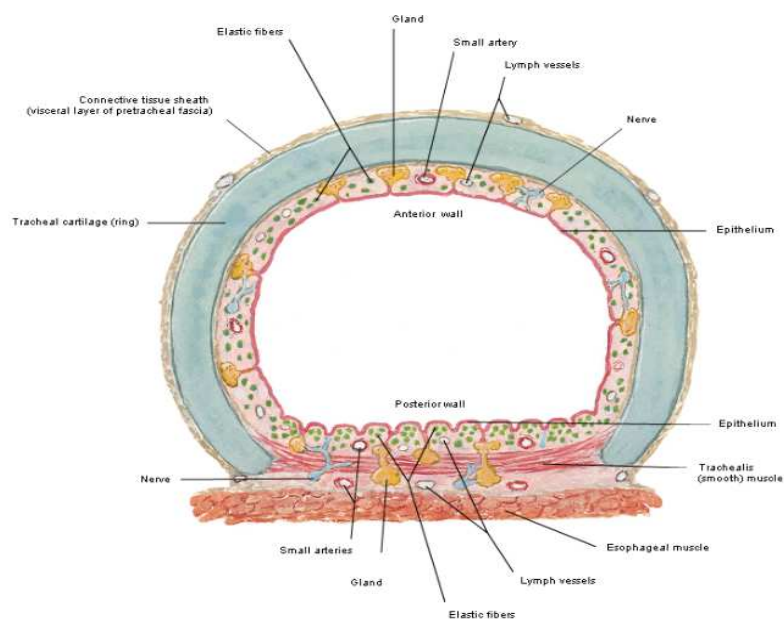




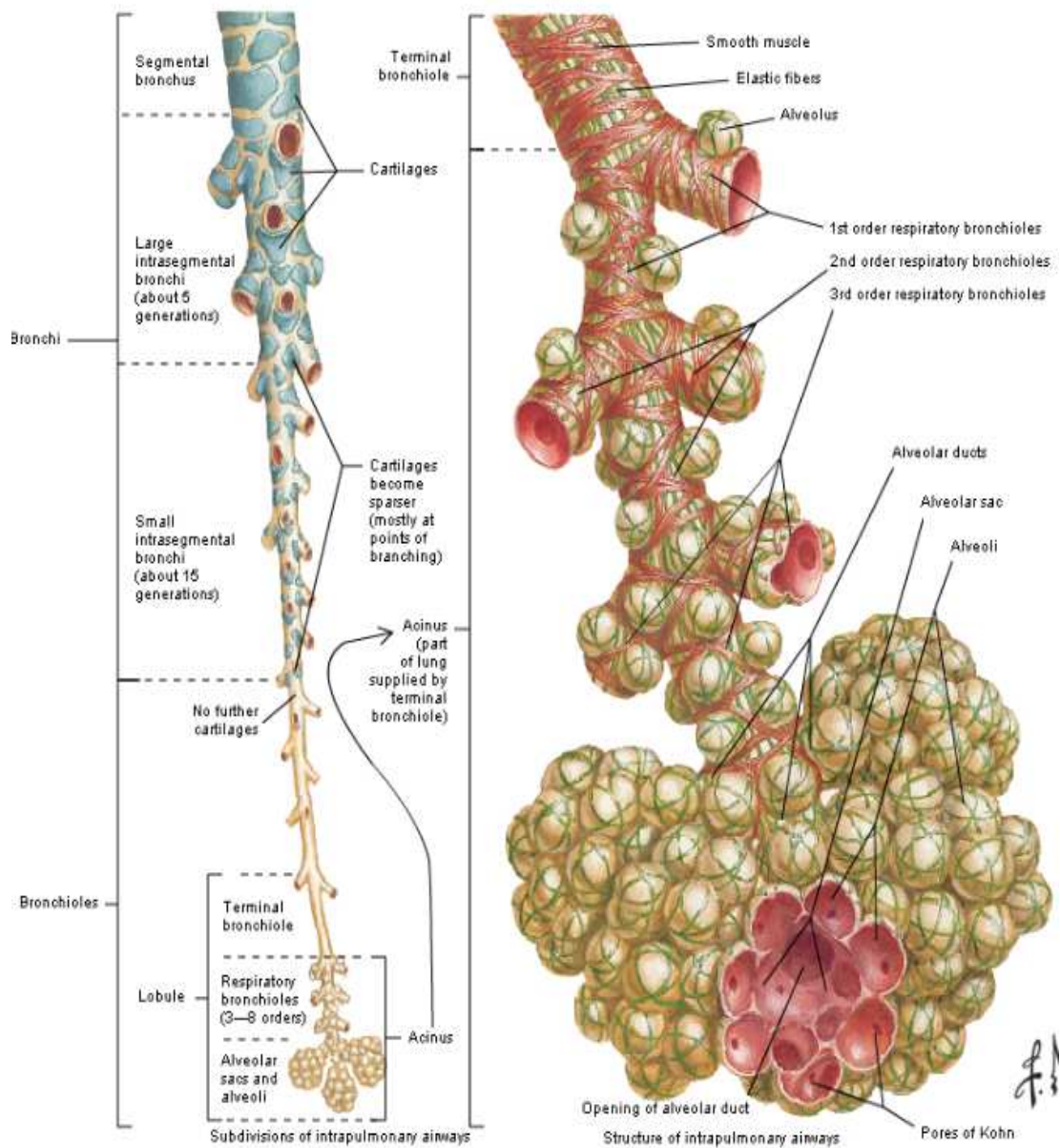
## Trachea and Major Bronchi Anterior View



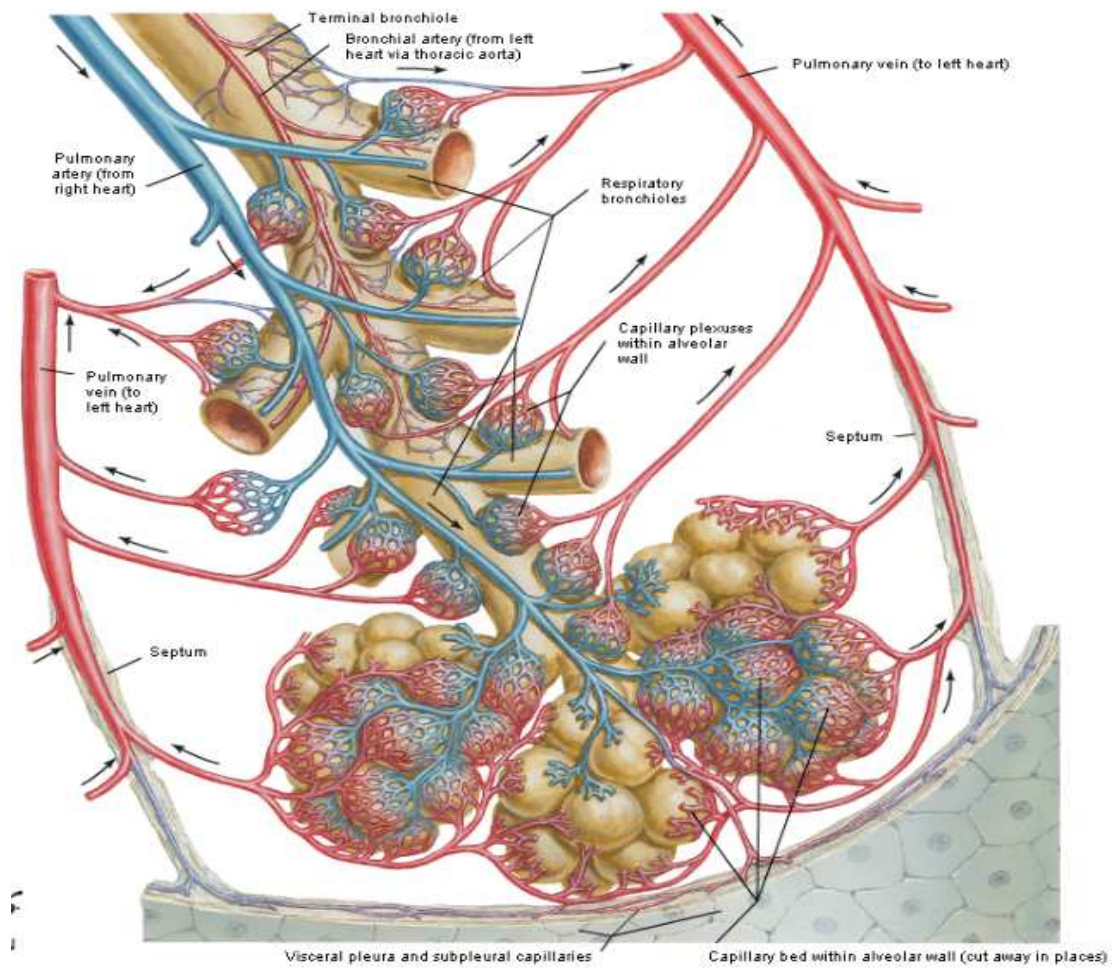
## Trachea Cross Section



## Intrapulmonary Airways: Schema

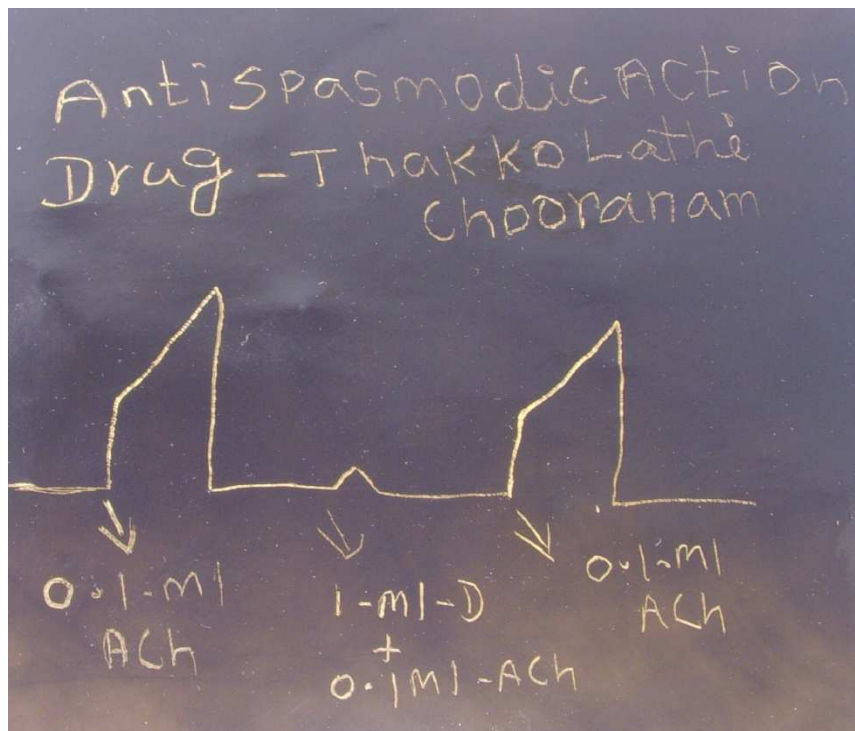


## Intrapulmonary Blood Circulation Schema

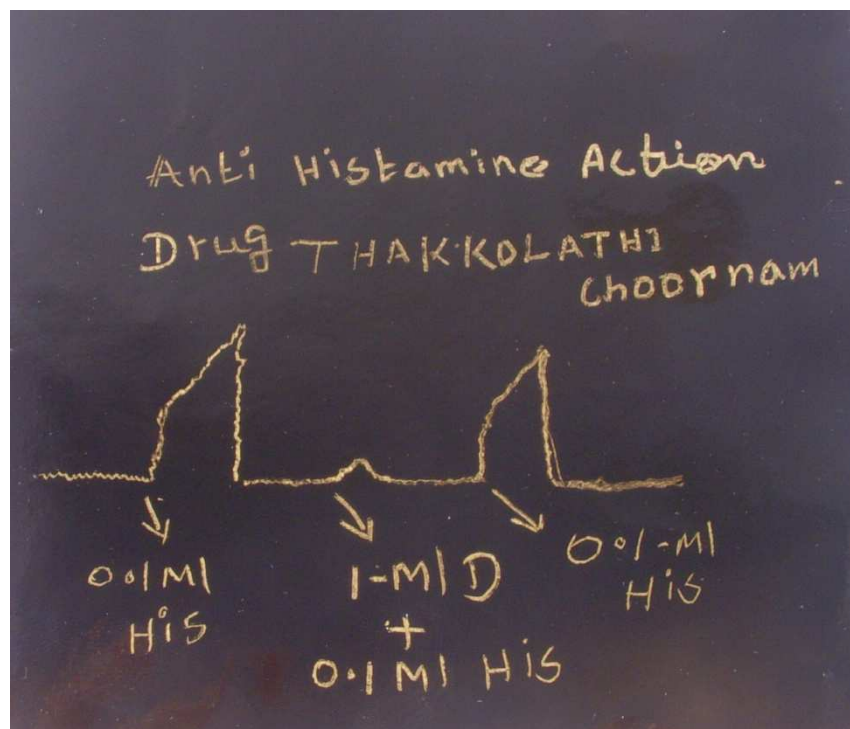




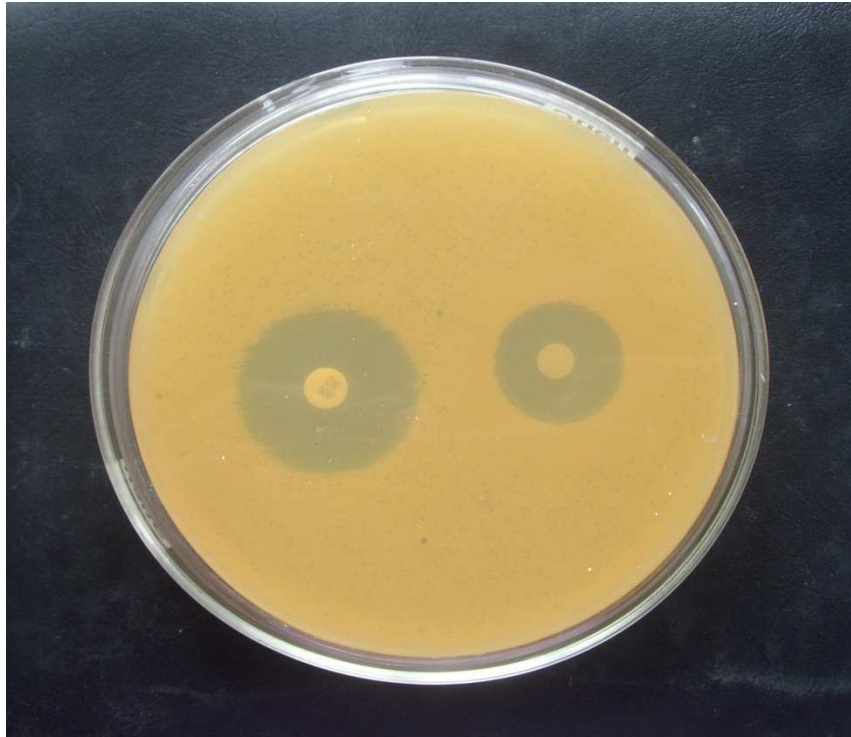
## ANTI-SPASMODIC ACTION OF THAKKOLATHI CHOORANAM



## ANTI-HISTAMINIC ACTION OF THAKKOLATHI CHOORANAM



**SENSITIVE TO ESCHERICHIA COLI**



**MODERATELY SENSITIVE**

